ADDITIONAL NOTES ON THE GENUS VERBENA. XXIII

Harold N. Moldenke

VERBENA [Dorst.] L.

Additional synonymy: Aubletia "Le Monn. ex Rozier mut. Dandy" ex Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 109, in syn. 1973.

Additional & emended bibliography: Anon., Breviary [mss. on vellum, Pierpont Morgan Lib.] 32 & 37. 15—; Piperno, De Magicis Affect. 1635; Breyn., Prod. Fasc. Rar. Pl., ed. 1, 2: 104. 1688; L., Sp. Pl., ed. 1, imp. 1, 1: 18—21 & 342 (1753) and ed. 1, imp. 1, 2: 601, 630, 660, 878, & 879. 1753; Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 115—117. 1755; L., Syst. Nat., ed. 10 [Stockh.], 2: 851—852 (1759) and ed. 10 [Halle], 2: 851—852. 1760; Sloane, Civil & Nat. Hist. Jamaic., ed. 2, 115—117. 1789; Ait., Hort. Kew. 3: 480. 1789; Batsch, Tabl. Aff. Reg. Veg. 190. 1802; Michx., Fl. Bor.-Am., ed. 1, imp. 1, 2: 13—15 & 340. 1803; A. DC. in A. P. & A. DC., Pl. Rar. Jard. Genèv. 5: 22. 1830; Cham., Linnaea 7: 252—271. 1832; J. Grah., Cat. Pl. Bomb. 154. 1839; Jenner, Fl. Turnbridge Wells 33. 1845; Firminger, Man. Gard., ed. 3, 86, 101, 103, 310, 326, 526, & 620. 1874; Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1043—1047 & 1252. 1879; J. Sm., Dict. Pop. Names Pl. 428. 1882; Woodr., Gard. in India, ed. 5, 421. 1889; G. Ricci, Lo Sperimant. 66: 483. 1890; Brannér & Coville, Ann. Rep. Geol. Surv. Ark. 1888 (4): [List Pl. Ark.] 210—211. 1891; Dymock, Warden, & Hooper, Pharmacog. Ind. 3: [iii] & 58—60. 1893; Voss in Vilm., Blumengärtn., ed. 3, 1: 822 & 824—829, pl. 48 & 49. 1895; Rojas Acosta, Cat. Hist. Nat. Corr. 76, 173, 193, & 206. 1897; Woodr., Journ. Bomb. Nat. 12: 359. 1899; Chesnut, Contrib. U. S. Nat. Herb. 7: 383. 1902; Collett, Fl. Siml. 378 & 379. 1902; Dalla Torre & Harms, Gen. Siphonog., imp. 1, 430. 1904; Cooke, Fl. Presid. Bombay, ed. 1, 3: 422 (1905) and ed. 1, 3: 436—437. 1906; Kirby, Brit. Flow. Pl. 116, pl. 74. 1906; L., Sp. Pl., ed. 1, imp. 2, 1: 18—21 & 342 (1907), ed. 1, imp. 2, 2: 601, 630, 660, 878, & 879 (1907), ed. 1, imp. 3, 1: 18—21 & 342 (1907), and ed. 1, imp. 3, 2: 601, 630, 660, 878, & 879. 1907; Woodr., Gard. Trop., ed. 6, 436, 442, & 445. 1910; F. Hermann, Fl. Deutschl. & Fennoskand. 387. 1912; Georgia, Man. Weeds 343—346, fig. 238. 1914; M. R. Gilmore, Bur. Am. Ethnol. Ann. Rep. 33: 111, 144, 146, & 147. 1919; R. M. Harper, Torreya 20: 72. 1920; Rohde, Old Engl. Herbals, imp. 1, 29, 30, 43, 44, 64, 72, 106, 107, & 113. 1922; Knoche, Fl. Balear., ed. 1, 252, 275, 293, 339, & 410. 1923; Parker, Forest Fl. Punj., ed. 2, 405. 1924; Kräusel in Just, Bot. Jahresber. 48 (1): 194 & 241. 1926; Parodi, Rev. Fac. Agron. & Vet. Buenos Aires 5: 138—139. 1926; F. E. Clements, Pl. Succ. & Indecat. 265, 302, 362, & 375. 1928; Wilder, Frag. Path 125, 174, 175, 203, 344, 367, 371, & 406. 1932; H. M. Fox, Gardening with Herbs, imp. 1, 172. 1933; L., Sp. Pl., ed. 1, imp. 4, 1: 18—21 & 342 (1934) and ed. 1, imp. 4, 2: 601, 630, 660, 878, & 879. 1934;

Joshi in Kashyap, Lahore Dist. Fl. 193 & 194. 1936; Madrid Moreno, Declar. Virt. Arb. & Pl. 74, 75, & 170. 1936; Zangheri, Fl. & Veg. Pinet. Raven. 189, 235, & 271. 1936; Kamm, Old Time Herbs, imp. 1, 118—121. 1938; González, Lombardo, & Vallarino, Pl. Med. Vulg. Uruy. 87. 1939; Demaree, Taxodium 1: 60—61 & 88. 1943; Joret, Valois Phytosoc. & Phytogéogr. 241, pl. 68. 1949; Weiss & O'Brien, Ind. Pl. Diseases U. S. 5: 1177—1178. 1953; Blakelock in H. Field, Contrib. Fauna & Fl. S.W. Asia [7]. 1955; W. H. Camp in Camp, Boswell, & Magness, World in Your Gard., imp. 1, 82 & [83]. 1957; L., Sp. Pl., ed. 1, imp. 5, 1: 18—21 & 342 (1957) and ed. 1, imp. 5, 2: 601, 630, 660, 878, & 879. 1957; Steinmetz, Cod. Veget. 1189. 1957; Cooke, Fl. Presid. Bombay, ed. 2, imp. 1, 2: 501 & 517—518. 1958; W. H. Camp in Camp, Boswell, & Magness, World in Your Gard., imp. 2, 82 & [83]. 1959; V. J. Chapm., Salt Marshes & Salt Deserts, ed. 1, 225 & 389. 1960; Booth, Encycl. Ann. & Bien. Gard. Pl. 439—440. 1962; Font Quer, Pl. Medic. 635. 1962; A. P. Balf., Ann. & Bien. Fls. 85—86. 1963; Dalla Torre & Harms, Gen. Siphonog., imp. 2, 430. 1963; Batten & Bokelm., Wild Fls. East. Cape Prov. 125, 172, & 182, pl. 99 (9). 1966; Engel, Fl. Magica 39. 1966; Cooke, Fl. Presid. Bombay, ed. 2, imp. 2, 2: 501 & 517—518. 1967; J. Graf, Pfl. Bestimm. 159. 1967; A. R. Moldenke, Host-plant Relations [12]. 1968; Fletcher & Henderson, Regn. Veg. 63: 172 & 188. 1969; J. Hutchinson, Evol. & Phylog. Flow. Pl. 467, 468, 470, & 715, fig. 414. 1969; Keng, Ord. & Fam. Malay. Seed Pl. 279. 1969; Ehrendorfer, Taxon 19: 599. 1970; H. M. Fox, Gardening with Herbs, imp. 2, 172. 1970; Krapovickas, Bol. Soc. Argent. Bot. 11: 261 & 269. 1970; H. R. & B. Mockel, Mockel's Desert Flow. Book 258—259. 1970; Abbayes, Claustres, Corillon, & Dupont, Fl. & Veg. Mass. Armor. 662. 1971; Kamm, Old Time Herbs, imp. 2, 118—121. 1971; Lind & Tallantire, Some Com. Flow. Pl. Uganda, ed. 2, 145 & 248. 1971; Perrot & Paris, Pl. Médic. 1: 103, fig. 8—13. 1971; Rohde, Old Engl. Herbals, imp. 2, 29, 30, 43, 44, 64, 72, 106, 107, & 113. 1971; Schnack in Meja & Moguil., Rec. Adal. Biol. 242—251. 1971; Wyman, Gard. Encycl., imp. 1, 35, 47, 49, 330, 336, 392, 396, 493, 522—526, 1003, & 1153—1154 (1971) and imp. 2, 35, 47, 49, 330, 336, 392, 396, 493, 522—526, 1003, & 1153—1154. 1972; Alemán Frías, Aurich, Ezcurra Ferrer, Gutiérrez Vázquez, Horstmann, López Rundueles, Rodríguez Graquitena, Roquel Casabella, & Schreiber, Die Kulturpfl. 19: 423. 1972; Dymock, Warden, & Hooper, Handard 15: 330 & 345. 1972; H. L. V. Fletcher, Herbs 134 & 135. 1972; Fogg, Dict. Ann. Pl. 164. 1972; Krapovickas, Mem. Cong. Latinoam. Bot. 1: 253. 1972; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 109, 139, 172, 491, 542, 805, 860, 1064, 1200, & 1206-1208. 1973; Anon., Assoc. Étud. Tax. Fl. Afr. Trop. Index 1972: 56. 1973; Bullington, Trans. Ill. Acad. Sci. 66: 73. 1973; Cvančara & Šourková, Preslia 45: 272. 1973; Ebinger, Trans. Ill. Acad. Sci. 66: 119. 1973; Hegnauer, Chemotax. Pfl. 6 [Chem. Reihe 21]: 658, 659, 661, 663, 668, & 674—677. 1973; Hitchc. & Cronq., Fl. Pacif. Northw. 398 & 729. 1973; J. Hutchinson, Fam. Flow. Pl., ed. 3, 487 & 966. 1973; Khush, Cytogen. Aneupl. 15, 148, 149, & 301. 1973; Mahler, Fl. Taylor Co. 154—157, fig. 241 & 242. 1973; H. T.

& R. T. Northen, Greenhouse Gard., ed. 2, 362 & 387. 1973; Shetler & Read, Fl. N. Am. Rep. 71: 48. 1973; Solbrig, Arnoldia 33: 138 & 145. 1973; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 784 & 786—789. 1973; Ackerm. & Bamberg in Lieth, Phenol. & Season. Model. 243. 1974; Anon., Biol. Abstr. 57 (4): B.A.S.I.C. E.296. 1974; Barbour, Diaz, & Breidenbach, Ecology 55: 1210. 1974; Barrows, Biol. Abstr. 57: 5071. 1974; Beaugé, Chenopod. Alb. 351 & 429, fig. 60. 1974; D. Burpee, Burpee Seeds 1975: 48. 1974; Caswell Massey Co., Apothecary Cat. 1974-1975: 69. 1974; V. J. Chapm., Salt Marshes & Salt Deserts, ed. 2, 225 & 389. 1974; Dony, Perring, & Rob, English Names Wild Fls. 61 & 116. 1974; Fenaroli, Rivist. Ital. 56: 224. 1974; Fitter, Fitter, & Blamey, Wild Fls. Brit. & N. Eu. 192 & 193, fig. 7. 1974; Frederick, Ohio Journ. Sci. 74: 111. 1974; Harkness, Seedlist Handb. 181. 1974; Heslop-Harrison, Ind. Kew. Suppl. 15: 16, 142, & 151. 1974; Howes, Dict. Useful Pl. 124, 167, 207, 251, & 270. 1974; "H. R.", Biol. Abstr. 57: 1904. 1974; Hylton, Rodale Herb. Book 492—494 & 613—614. 1974; Jones & Bell, Trans. Ill. Acad. Sci. 67: 87. 1974; Knoche, Fl. Balear., ed. 2, 252, 275, 293, 339, & 410. 1974; Lieth, Phenol. & Season. Model. 444. 1974; Lust, Herb. Book, ed. 1, 126—137, 181—182, 402, 440, 490, 495, 502, 504, 517, 520, 521, 549, 561, & 588. 1974; Michx., Fl. Bor.-Am., ed. 1, imp. 2, 2 [Ewan, Class. Bot. Am. 3]: 13—15 & 340. 1974; Moldenke, Phytologia 28: 343—401, 403—404, 425—432, 435, 438, 440, 441, 443, 444, 446, 451, 457, 458, 460, 462, 464, 465, 508, & 510—512 (1974) and 29: 41, 45, 47, 50—52, 55, 56, 60, 62, 78, 193, & 512. 1974; E. J. Anderson, Gard. Journ. 24: 52. 1974; A. L. Moldenke, Phytologia 29: 182. 1974; J. P. Morgan Library, Fls. of the Centuries 60 & 68. 1974; Rogerson & Becker, Bull. Torrey Bot. Club 101: 170. 1974; Rousseau, Géogr. Florist. Québ. [Trav. & Doc. Centr. Étud. Nord. 7:] 376, 377, 465, 467, 473, 479, 480, 502, 504, 505, 510, 516, 644, & 788. 1974; Ross-Craig, Drawings Brit. Pl. Ind. 36. 1974; E. R. Spencer, All About Weeds [circular]. 1974; Stuckey & Wentz, Ohio Journ. Sci. 74: 34. 1974; Sunding, Garcia Ort. Bot. 2: 20. 1974; F. G. Taylor in Lieth, Phenol. & Season. Model. 243 & 444. 1974; Troncoso, Darwiniana 18: [295], 296, 300, 302, 304, 307—319, 342, 344. 352, 354, 360, & 409—412, fig. 2 & 3. 1974; Monod, Candollea 29: 412. 1974; Vogelenzang, Asher Guide Period. 2: 55. 1974; Wilder, Frag. Gard. 125, 174, 175, 203, 344, 367, 371, & 406. 1974; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [16]. 1975.

It is perhaps worth noting here that the "sweet verbena tree" of horticulturists and gardeners is Backhousia citriodora of Australia, while the "vervain sage" is Salvia verbenacea.

Airy Shaw (1973) still regards Burseria Loefl., as a synonym of Verbena, when actually, as I have pointed our several times over the past years, it is a synonym of Priva Adans.

Caswell Massey Company list a "yellow lemony bath soap" named "Verbena Vegesperma Bath Soap" but fail to identify the "verbena" scent contained in it — most probably from Aloysia triphylla

(L'Hér.) Britton.

The index in Firminger's work (1874) cites pages 76, 84, & 85, but I can find no reference to Verbena on any of these pages.

According to Fletcher & Henderson (1969) the biosystematics of section Glandularia are documented by Solbrig in the Michigan Botanical Garden of the University of Michigan at Ann Arbor.

Weiss & O'Brien (1953) record various pests and diseases as attacking Verbena, mostly referred to definite species of the genus on which they have been observed, but among those credited merely to "Other spp." of Verbena beyond those named are Cercospora septatissima Tracy & Earle (in Mississippi), C. truncatella Atk. (Alabama), C. verbenicola Ell. & Ev. (Texas, Alabama, Louisiana), Cuscuta arvensis Beyr. (Oklahoma), Erysiphe cichoracearum DC. (occasional), Meloidogyne sp. [Heterodera marioni (Cornu) Goodey], Phymatotrichum omnivorum (Shear) Dug. (Texas), Plasmopara halstedii (Farl.) Berl. & De Toni (New Mexico), Puccinia aristidae Tracy (Arizona), P. vilfae Arth. & Holw. (Kansas, Missouri), and Septoria verbenae Rob. (Vermont to Mississippi, Texas, South Dakota).

VERBENA ALBICANS Rojas, Cat. Hist. Nat. Corr. 76. 1897.

Bibliography: Rojas Acosta, Cat. Hist. Nat. Corr. 76. 1897; Krapovickas, Bol. Soc. Argent. Bot. 11: 261. 1970; Heslop-Harrison, Ind, Kew. Suppl. 15: 142. 1974.

Nothing is known to me of this species except what is given in the bibliography listed above. It was apparently described from Corrientes, Argentina.

VERBENA ALBIFLORA Rojas, Cat. Hist. Nat. Corr. 193, nom. nud. 1897.

Bibliography: Rojas Acosta, Cat. Hist. Nat. Corr. 193. 1897; Krapovickas, Bol. Soc. Argent. Bot. 11: 269. 1970.

Nothing is known to me about this species except what is stated about it in the bibliography above. It was apparently supposed to be native to Corrientes, Argentina.

VERBENA AMBROSIFOLIA Rydb.

Additional bibliography: Demaree, Taxodium 1: 60. 1943; Moldenke, Phytologia 28: 344, 345, 430, 431, & 451. 1974.

Reveal and his associates found this plant growing on steep mountain slopes associated with Yucca, Opuntia, and "other shrubs"

The W. H. Earle 52, distributed as V. ambrosifolia, is actually V. ciliata Benth.

Additional citations: MEXICO: Coahuila: Reveal, Hess, & Kiger 2574 (Mi).

VERBENA AMBROSIFOLIA f. EGLANDULOSA Perry

Additional bibliography: Moldenke, Phytologia 28: 241—242 & 430. 1974.

Additional citations: ARIZONA: Cochise Co.: Wentworth 1333/ 1333a (It).

VERBENA ARISTIGERA S. Moore

Additional synonymy: Glandularia aristigera (Briq.) Tronc., Darwiniana 18: 317, sphalm. 1974.

Additional bibliography: Moldenke, Phytologia 28: 344 & 457. 1974; Troncoso, Darwiniana 18: 317 & 409. 1974.

Troncoso (1974) cites Schinini 4028 from Paraguay in the Darwinion Herbarium at San Isidro, Argentina.

VERBENA BERTERII (Meisn.) Schau.

Additional bibliography: Moldenke, Phytologia 28: 345. 1974.

The Zöllner 7872, distributed as V. berterii, is actually V. cumingii Moldenke.

xVERBENA BINGENENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 23: 215. 1972; A. L. Moldenke, Phytologia 29: 182. 1974.

VERBENA BIPINNATIFIDA Nutt.

Additional synonymy: Verbena bipinnalefida Nutt., in herb.

Additional bibliography: Branner & Coville, Ann. Rep. Geol. Surv. Ark. 1888 (4): [List Pl. Ark.] 210. 1891; Greene, Pittonia 5: 136. 1903; Demaree, Taxodium 1: 60. 1943; Weiss & O'Brien, Ind. Pl. Diseases U. S. 5: 1177 & 1178. 1953; Wyman, Gard. Encycl., imp. 1, 1153 (1971) and imp. 2, 1153. 1972; Mahler, Fl. Taylor Co. 155 & 156. 1973; Harkness, Seedlist Handb. 181. 1974; Moldenke, Phytologia 28: 345--346, 365, 395, 396, 429, 432, & 457. 1974; Stuckey & Wentz, Ohio Journ. Sci. 74: 34. 1974; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [116]. 1975.

Stewart (1972) says that this species is "Frequently found in gardens [in West Pakistan] and as an escape about Abbottabad and Mansera in Hazara", but it is most probable that he is referring to V. temuisecta Briq. or even perhaps to xV. monacensis Moldenke. I doubt very much whether V. bipinnatifida occurs, wild or cultivated, in Pakistan. Kral found it growing in "black earth of prairie remnant" in Alabama. King found it growing on "loam to clay loam over clay loam to light-clay" and in neutral to slightly acid fine sandy loam; Taylor reports it "frequent" along roadsides and in open woods; Eckhardt found it to be "locally infrequent" in alluvial limestone loam of dry ravines and "occasional" on sandy loam and limestone soils. Demaree reports it "common" on marl ridges in Arkansas.

The corollas are said to have been "blue" on Eckhardt 1571 & 1580. Harkness (1974) describes the corolla color as "lilac or purple".

Weiss & O'Brien (1953) list the following pests and diseases as attacking V. bipinnatifida in the United States: Cercospora verbenicola Ell. & Ev., a leaf-spot (in Texas), Phymatotrichum omni-

vorum (Shear) Dug., a root-rot (Texas), and Septoria verbenae Rob., a leaf-spot (Texas).

The R. Kral 25191, distributed as V. bipinnatifida, is actually V. elegans var. asperata Perry, while S. Y. Hu 9643 is V. tenuisecta Briq.

Additional citations: ALABAMA: Sumter Co.: R. Kral 38643 (W—2673933). ARKANSAS: Fannin Co.: Demaree 65418 (Ld). Hempstead Co.: Demaree 66371 (Ld). TEXAS: Coke Co.: W. King 242 (Ac), 243 (Ld). Edwards Co.: Demaree 63359 (Ld). Tom Greene Co.: Eckhardt 1571 (Kh), 1580 (Tu), 1756 (Mi). Travis Co.: L. C. Taylor 3034 (Mi).

VERBENA BONARIENSIS L.

Additional & emended bibliography: L., Sp. Pl., ed. 1, imp. 1, 1: 20. 1753; L., Syst. Nat., ed. 10 [Stockh.], 2: 852 (1759) and ed. 10 [Halle], 2: 852. 1760; Ruiz & Pav., Fl. Peruv. & Chil. 1: 21. 1798; A. P. Balf., Ann. & Bien. Fls. 85. 1863; Firminger, Man. Gard., ed. 3, 526 & 630. 1874; Voss in Vilm., Blumengärt., ed. 3, 1: 825 & 826. 1895; L., Sp. Pl., ed. 1, imp. 2, 1: 20 (1907) and ed. 1, imp. 3, 1: 20. 1907; Dunn & Tutcher, Kew Bull. Misc. Inf. Addit. Ser. 10: 201 & 202. 1912; Kloos, Nederl. Kruidk. Archief 1919: 96 & 97. 1919; L., Sp. Pl., ed. 1, imp. 4, 1: 20. 1934; Joshi in Kashyap, Lahore Dist. Fl. 193 & 194, fig. 166. 1936; Madrid Moreno, Declar. Virt. Arb. & Pl. 74, 75, & 170. 1936; Demaree, Taxodium 1: 60. 1943; Harkness, Seedlist Handb. 181. 1974; Moldenke, Phytologia 28: 346, 354, 380, 396, 428, 440, 443, 451, & 464. 1974; Troncoso, Darwiniana 18: 308, 310, 311, & 409. 1974; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [116]. 1975.

Additional illustrations: Joshi in Kashyap, Lahore Dist. Fl. 193, fig. 166. 1936.

Voss (1895) includes Verbena capensis Thunb. in the synonymy of V. bonariensis, but it seems, rather, to belong to the synonymy of Lippia javanica (Burm. f.) Spreng. He refers to V. bonariensis as the "Bonarisches Eisenkraut", remarking that in German gardens it blooms from June to October. He regards V. rigida Spreng. (which he calls V. bonariensis f. venosa) as being merely a lower-growing form.

Stewart (1972) says of this species as it occurs in Pakistan: "A weed from Brazil which seems to be spreading in Hazara. It has been found in Abb., Mansera and Thandiani". Cramer found it to be common along stream borders in Sri Lanka at 2100 meters altitude. Demaree found it on riverbottoms and in wet flat open woods and "very common" on levees in Arkansas. Joshi (1936) reports it as a " native of Brazil, but now naturalised in various parts of India".

The corollas are said to have been "lilac" in color on Hatschbach 54435 and "blue" and not scented on Cramer 3461. Madrid Moreno (1936) reports that the species possesses medicinal properties and records the vernacular names, "poleo", "poleo silvestre", and "locoloco". Balfour (1863) describes it as "A tall hardy perenni-

al growing 3—4 feet with rosy purple heads of flowers, rather a coarse plant but useful for massing in the semi-wild garden, and for cutting. Easily treated as a half-hardy annual."

The Moldenke & Moldenke 26836 specimen cited below is a transfer from the Bailey Hortorium herbarium.

Additional & emended citations: MISSISSIPPI: Perry Co.: Moldenke & Moldenke 26836 (Kh). ARKANSAS: Clark Co.: Demaree 62551 (Ac), 63969 (Ld), 66611 (Ld). Desha Co.: Demaree 65326 (Ac). BRAZIL: Santa Catarina: Hatschbach 54435 (W—2745063). MACARONESIA: Gomera: Andreas s.n. [Februar 1897] (Mu). SRI LANKA: L. H. Cramer 3461 (W—2721883).

VERBENA BRACTEATA Lag. & Rodr.

Additional & emended bibliography: Michx., Fl. Bor.-Am., ed. 1, imp. 1, 2: 13. 1803; A. DC. in A. P. & A. DC., Pl. Rar. Jard. Genèv. 5: 22. 1830; Brannder & Coville, Ann. Rep. Geol. Surv. Ark. 1888 (4): [List Pl. Ark.] 210. 1891; Georgia, Man. Weeds 345. 1914; Demaree, Taxodium 1: 60. 1943; Weiss & O'Brien, Ind. Pl. Diseases U. S. 5: 1177 & 1178. 1953; Ebinger, Trans. Ill. Acad. Sci. 66: 119. 1973; Hegnauer, Chemotax. Pfl. 6 [Chem. Reihe 21]: 661. 1973; Hitchc. & Cronq., Fl. Pacif. Northw. 398, fig. 1a. 1973; Mahler, Fl. Taylor Co. 155 & 156. 1973; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 786, 788, & 789. 1973; Michx., Fl. Bor.-Am., ed. 1, imp. 2, 2 [Ewan, Class. Bot. Am. 3]: 13. 1974; Moldenke, Phytologia 28: 346, 426, 427, & 429—431. 1974.

Additional illustrations: Hitchc. & Cronq., Fl. Pacif. Northw. 398, fig. 1a. 1973; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 789. 1973.

Kral has extended this species' range by finding it in sandy gravelly soil of a motel lot in Marion County, Alabama.

DeCandolle (1830) says: "Nous avons cultivé cette espèce [in the Jardin Botanique at Geneva, Switzerland], de graines envoyées du Chili par le docteur Bertero. Michaux, qui l'a décrite le premier, l'avait d'écouverte dans l'Amérique septentrionale." I have seen no material of this species from Chile, either wild or cultivated.

Fedde (1932) asserts in the volume index that this species is mentioned on page "841", but I fail to find any mention of it there.

Lehr found the plant "infrequent" at 5000 feet altitude in Arizona. The Jespersens refer to it as a "sprawling hispid herb to 18 inches tall, flowers small, bluish-purple" and found it growing on level grasslands associated with Lactuca, Evax, Buchloë, and Salsola at 3600 feet altitude. Eckhardt found the erect form as locally infrequent in alluvial limestone loam in a dry ravine, the flowers [corollas] "pale-blue". Demaree reports it as "very common" in old schoolyards in Arkansas.

Weiss & O'Brien (1953) record Puccinia vilfae Arth. & Holw., a rust, as attacking this species in Nevada and Septoria verbenae Rob., a leaf-spot, attacking it in Idaho, Kansas, South Dakota,

and Wisconsin.

Ebinger (1973) cites McClain 276 from Coles County, Illinois. Georgia (1914) recommends that, if this species becomes a "weed" "Only by a short rotation of cultivated crops is it practicable to rid the ground of the perennial roots and the dormant seeds of this species."

The O. B. Metcalfe 1008 specimen, cited below, is a transfer from the Pomona College herbarium from which it was previously cited by me.

Additional citations: ALABAMA: Marion Co.: R. Kral 39185 (W—2673932). KANSAS: Riley Co.: W. T. Swingle s.n. [June 23, 1887] (Mi); Varney s.n. [July 11, 1889] (Mi). ARKANSAS: Monroe Co.: Demaree 66906 (Ld). TEXAS: Moore Co.: Jespersen & Jespersen 2708 (Mi). Tom Green Co.: Eckhardt 1753 (Mi). NEW MEXICO: Sierra Co.: O. B. Metcalfe 1008 (N). ARIZONA: Yavapai Co.: Lehr 1035 (N).

VERBENA BRASILIENSIS Vell.

Additional bibliography: Demaree, Taxodium 1: 60. 1943; Moldenke, Phytologia 28: 346—347, 354, 362, 429, & 440. 1974.

Demaree refers to this plant as "common" in river bottoms, old war-trenches, waste areas, and disturbed woods in Arkansas, and found it on the coastal plain at altitudes of 120—380 feet.

The Moldenke & Moldenke 26819 specimen cited below is a transfer from the Bailey Hortorium herbarium. The Holm-Nielsen & Jeppesen 158, distributed as V. brasiliensis, is actually V. litoralis H.B.K.

Additional & emended citations: ALABAMA: Marion Co.: Moldenke & Moldenke 26819 (Kh). ARKANSAS: Arkansas Co.: Demaree 67575 (Ld). Ashley Co.: Demaree 67611 (Ld). Chicot Co.: Demaree 64751a (Ld), 67949 (Ld). Lafayette Co.: Demaree 69008 (Ld). Nevada Co.: Demaree 63389 (Ld), 63889 (Ld). Sevier Co.: Demaree 65277 (Ac), 68935 (Ld), 68936 (Ld). TEXAS: Hardin Co.: C. L. Lundell 14083 (Mi). Jefferson Co.: C. L. Lundell 14136 (Mi).

VERBENA CALLIANTHA Briq.

Additional bibliography: Moldenke, Phytologia 28: 347, 385, & 440. 1974.

Krapovickas and his associates refer to this plant as "erect" and found it growing "in chacras", the corollas lilac in color; Hatschbach 17637 had "violet" corollas.

Additional citations: BRAZIL: Paraná: Hatschbach 17637 (Ld). ARGENTINA: Corrientes: Krapovickas, Cristóbal, Carnevali, Quarín, González, & Isikawa 23981 (Ld).

VERBENA CANADENSIS (L.) Britton

Additional synonymy: Verbena aubletia var. drummondii Hort. ex Vilm., Illustr. Blumeng., ed. 2, 1043. 1879. Verbena obletia

Retz. ex Voss in Vilm., Blumengärt., ed. 3, 1: 825, in syn. 1895. Verbena aubletia f. lambertii (Sims) Voss in Vilm., Blumengärt., ed. 3, 1: 825. 1895. Verbena aubletia f. lambertii rosea Don ex Voss in Vilm., Blumengärt., ed. 3, 1: 825. 1895. Verbena aubletia f. drummondii Voss in Vilm., Blumengärt., ed. 3, 825. 1895. Verbena aubleti Woodrow, Gard. Trop., ed. 6, 445. 1910. Verbena aubletia compacta grandiflora Fogg, Dict. Ann. Pl. 164. 1972. Verbena canadensis (L.) Britton & Rose, in herb.

Additional bibliography: Ruíz & Pav., Fl. Peruv. & Chil. 1: 21. 1798; Michx., Fl. Bor.-Am., ed. 1, imp. 1, 2: 13. 1803; Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1043. 1879; Branner & Coville, Ann. Rep. Geol. Surv. Ark. 1888 (4): [List Pl. Ark.] 210. 1891; Voss in Vilm., Blumengärt., ed. 3, 1: 825, pl. 48. 1895; Woodr., Gard. Trop., ed. 6, 445. 1910; Demaree, Taxodium 1: 60. 1943; Weiss & O'Brien, Ind. Pl. Diseases U. S. 5: 1177 & 1178. 1953; Booth, Encycl. Ann. & Bien. Gard. Pl. 439. 1962; Wyman, Gard. Encycl., imp. 1, 1153 (1971) and imp. 2, 1153. 1972; Fogg, Dict. Ann. Pl. 164. 1972; Hegnauer, Chemotax. Pfl. 6 [Chem. Reihe 21]: 661. 1973; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 786, 788, & 789. 1973; Harkness, Seedlist Handb. 181. 1974; Howes, Dict. Useful Pl. 270. 1974; Jones & Bell, Trans. Ill. Acad. Sci. 67: 87. 1974; Michx., Fl. Bor.-Am., ed. 1, imp. 2, 2 [Ewan, Class. Bot. Am. 3]: 13. 1974; Moldenke, Phytologia 28: 347, 365, 369, 393, 428, 451, 457, 464, & 465. 1974; Troncoso, Darwiniana 18: 315 & 409. 1974.

Additional illustrations: Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1043. 1879; Voss in Vilm., Blumengärt., ed. 3, 1: pl. 48. 1895; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 789. 1973.

Voss (1895) calls this plant the "Aubletien-Eisenkraut", "verveine de Miquelon", and "verveine à bouquets". He distinguishes his named forms as follows: "Blätter.....oft mehr tief-3-spaltig [so bei f. Lambertii.....die Blätter schmäler und stark eingeschnitten, ebenso f. Lambertii rosea Don. mit grösser, hellrötlichpurpurn-gefärbter, wohlriechender Blumenkrone von fast 2 cm Breite].....f. Drummondii.....Blumenkrone 2 cm breit, mit weichhaariger Röhre, schwach wohlriechend, schön lilablau".

Fogg (1972) asserts that "V. aubletia (canadensis) is a valuable species [in cultivation] easily grown as a half-hardy annual. It produces heads of rosy-lilac flowers and there are several forms, including compacta grandiflora, with larger flowers and of a more compact habit of growth, and atroviolacea, rich violet flowers." Harkness (1974) describes the color of the corollas as "rosy-purple to white".

Vilmorin (1879) calls the species the "aubletia artiges Eisenkraut" and "aubletia-like vervain".

Busey encountered this species in clayey soil among grasses and Allium in Missouri. The corollas on Busey 87 are said to have been "bright-violet" when fresh. Demaree reports it as "common" on marl ridges, poor rocky ridges, and rocky wooded hill-

sides in Arkansas.

Weiss & O'Brien (1953) list Puccinia vilfae Arth. & Holw., a rust, as attacking this species in Oklahoma and Septoria verbenae Rob., a leaf-spot, in Louisiana and Oklahoma.

Jones & Bell (1974) record V. canadensis from Piatt County, Illinois. The Moldenke & Moldenke 26974 specimen cited below is a transfer from the Bailey Hortorium herbarium.

Additional & emended citations: GEORGIA: Baldwin Co.: Moldenke & Moldenke 26974 (Kh). FLORIDA: Duval Co.: G. H. M. Lawrence 193 (Ld). KANSAS: Riley Co.: Varney s.n. [May 28, 1889] (Mi). MISSOURI: Sainte Genevieve County: Busey 87 (N). ARKANSAS: Baxter Co.: Demaree 66284 (Ac). Howard Co.: Demaree 68200 (Ld). Marion Co.: Demaree 66270 (Ld). Sevier Co.: Demaree 68192 (Ld). Stone Co.: Demaree 67015 (Ld). TEXAS: Harris Co.: Tharp & Barkley 17T030 (Mi).

VERBENA CANESCENS H.B.K.

Additional bibliography: A. R. Moldenke, Host-plant Relations [12]. 1968; Moldenke, Phytologia 28: 348 & 464. 1974.

The Taylors encountered this plant in thin coarse well-drained soil in an area of mountainous ridges with oak-pine the major vegetation, while King encountered it in "weakly calcareous fine sandy loam with pebbles and sandstone on sandy conglomerate on strong slopes" and in "10--28-inch sand to loamy sand over sandy clay loam."

Andrew Moldenke (1968) reports from personal observation that this plant is visited by the phytophagous beetle, Calligrapha multipunctata, in Mexico.

Additional citations: TEXAS: Coke Co.: W. King 241 (Ld), 857 (Mi), 1720 (Ac). MEXICO: Zacatecas: Taylor & Taylor 5945 (N).

VERBENA CANESCENS f. ALBIFLORA Moldenke

Additional bibliography: Moldenke, Phytologia 23: 219. 1972; Harkness, Seedlist Handb. 181. 1974.

VERBENA CANESCENS var. ROEMERIANA (Scheele) Perry

Additional bibliography: Moldenke, Phytologia 28: 348. 1974.

Recent collectors have found this plant growing in red clay loam and in rocky limestone loam and report the common name "hillside vervain". White reports it as "infrequent" in Tom Green County, Texas. The corollas on Eckhardt 380 are said to have been "blue", while those on M. F. White 258 were "purple".

The D. B. Dunn 16070, distributed as V. canescens var. roemeriana, is actually V. neomexicana var. hirtella Perry.

Additional citations: TEXAS: Irion Co.: Eckhardt 380 (Sl). Tom Green Co.: M. F. White 258 (Sl).

VERBENA CAROLINA L.

Additional bibliography: L., Syst. Nat., ed. 10 [Stockh.], 2:

852 (1759) and ed. 10 [Halle], 2: 852. 1760; Ruíz & Pav., Fl. Peruv. & Chil. 1: 21. 1798; Moldenke, Phytologia 28: 348, 377, 432, & 451. 1974.

The Taylors encountered this plant on a rocky hillside "with tropical deciduous vegetation, soil thin, sandy, with gravelly-peat in some places", flowering and fruiting in August.

Additional citations: MEXICO: Zacatecas: Taylor & Taylor 6056 (N).

VERBENA CILIATA Benth.

Additional bibliography: Booth, Encycl. Ann. & Bien. Gard. Pl. 439. 1962; Moldenke, Phytologia 28: 348, 398, 431, 457, & 464. 1974.

The Taylors found this plant growing in oak-pine grassland on rocky hills with thin gravelly soil in Zacatecas, while Demaree refers to it as "common" on rocky open mountainsides in New Mexico and Wentworth encountered it in pine-oak woodland in Arizona.

The leaf-lobes on Wentworth 1622, cited below, are unusually large and broad. The Wentworth 1333/1333a, distributed as V. ciliata, is actually V. ambrosifolia f. eglandulosa Perry.

Additional citations: NEW MEXICO: Lincoln Co.: Demaree 62604 (Ld). ARIZONA: Cochise Co.: Wentworth 1039 (N, N), 1622 (It), 2299 (N), 2840 (N). Navajo Co.: W. H. Earle 52 (N). MEXICO: Zacatecas: Taylor & Taylor 6231 (N).

VERBENA CILIATA var. PUBERA (Greene) Perry

Additional bibliography: Moldenke, Phytologia 28: 205. 1974; Stuckey & Wentz, Ohio Journ. Sci. 74: 34. 1974.

VERBENA CLOVERAE Moldenke

Additional bibliography: Moldenke, Phytologia 28: 205. 1974.

King found this plant growing in "10--28 inch sand to loamy sand over sandy clay loam on gentle slopes".

Additional citations: TEXAS: Coke Co.: W. King 1503 (Z). Frio Co.: C. L. Lundell 13618 (Mi).

VERBENA COMONDUENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 23: 368. 1972; Heslop-Harrison, Ind. Kew. Suppl. 15: 142. 1974.

xVERBENA CORRUPTA Moldenke

Additional synonymy: Verbena phlogiflora x chamaedryfolia Voss in Vilm., Blumengärt., ed. 3, 1: 827. 1895.

Additional bibliography: Voss in Vilm., Blumengärt., ed. 3, 1: 827. 1895; Moldenke, Phytologia 23: 193--194 & 276. 1972.

Voss (1895) says of this hybrid: "Aus einer Kreuzung V. phlogiflora x chamaedryfolia enstand in den Gärten vor langer Zeit eine Sorte, Verbena 'Défiance', die schön und dankbar blüht, scharlachrote, grosse Blütendolden trägt, zu Blumenteppichen und -gruppen allgemain beliebt ist und nebst ihren Stamm-Eltern als 'Scharlach-

Verbenen' bezeichnet wird. 'Défiance' ist seit ein paar Jahren durch den aus ihr hervorgegangenen Sämling 'Nordlicht' übertroffen, der eine 20—25 cm hohe Sorte von kräftigem, gedrungenem Wuchs ist. Die bis 7 und 8 cm breiten, regelmässig geformten Blütendolden erscheinen von Ende Mai bis Oktober, und die 2 — 2 1/2 cm breiten Einzelblüten sind feurigorangescharlachrot; eignet sich vortrefflich zu Einfassung, Gruppen und, in Töpfen kultiviert, als Marktpflanze!" It should be noted, however, that he is undoubtedly in error in his statement that V. phlogiflora is also known as one of the "Scarlet Verbenas" in gardens. Its corollas are never of any color that could possibly be termed scarlet.

VERBENA CORYMBOSA Ruíz & Pav.

Additional bibliography: Moldenke, Phytologia 28: 348. 1974; Troncoso, Darwiniana 18: 310, 311, & 411. 1974.

Troncoso (1974) cited "Wedermann" [=Werdermann] 1170 from Valdivia, Chile, in the Darwinion herbarium at San Isidro.

VERBENA CRITHMIFOLIA Gill. & Hook.

Additional bibliography: Moldenke, Phytologia 28: 205. 1974; Troncoso, Darwiniana 18: 315, 317, 318, & 409. 1974.

Troncoso (1974) cites Bacigalupi & Nicora s.n. [Paso Córdoba; BAA 11612] from Río Negro, Argentina.

VERBENA CUMINGII Moldenke

Additional bibliography: Moldenke, Phytologia 23: 221. 1972.

Zöllner found this plant in flower in September.

Additional citations: CHILE: Coquimbo: Zöllner 7872 (Ld).

xVERBENA DEAMII Moldenke

Additional bibliography: Heslop-Harrison, Ind. Kew. Suppl. 15: 142. 1974; Moldenke, Phytologia 28: 349 & 429. 1974.

xVERBENA DERMENI Moldenke

Additional bibliography: Moldenke, Phytologia 23: 222 (1972) and 24: 31. 1972.

VERBENA DOMINGENSIS Urb.

Additional bibliography: Moldenke, Phytologia 28: 206 & 362. 1974.

Liogier describes this plant as "herbácea erguida, de hasta 60 cm. de alto, poco ramificada, flores moradas".

Material has been misidentified and distributed in some herbaria as V. scabra Vahl.

Additional citations: HISPANIOLA: Dominican Republic: A. H. Liogier 20675 (N).

VERBENA ELEGANS var. ASPERATA Perry

Additional bibliography: Moldenke, Phytologia 28: 349. 1974.

Kral found this plant growing in sandy clay of old fields. The

corollas on R. Kral 25191 are said to have been "lavender" when fresh.

Additional citations: MEXICO: Michoacán: R. Kral 25191 (Mi).

xVERBENA ENGELMANNII Moldenke

Additional bibliography: Demaree, Taxodium 1: 60. 1943; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 788. 1973; Moldenke, Phytologia 28: 349--350, 390, 426, 427, 429, & 464. 1974.

Demaree has found this plant growing in rocky open woods at 600 feet altitude in Arkansas.

Additional citations: ARKANSAS: Baxter Co.: Demaree 67493 (Ld).

VERBENA EPHEDROIDES Cham.

Additional bibliography: Moldenke, Phytologia 28: 350. 1974; Troncoso, Darwiniana 18: 311 & 411. 1974.

VERBENA FILICAULIS Schau.

Additional synonymy: Verbena filicaudis Sch. ex Troncoso, Darwiniana 18: 311, sphalm. 1974.

Additional bibliography: Moldenke, Phytologia 28: 350 & 464. 1974; Troncoso, Darwiniana 18: 311, 411, & 412. 1974.

VERBENA FLAVA Gill. & Hook.

Additional bibliography: Moldenke, Phytologia 24: 217. 1972; Troncoso, Darwiniana 18: 318 & 409. 1974.

VERBENA GLABRATA H.B.K.

Additional bibliography: Moldenke, Phytologia 28: 210. 1974.

Additional citations: ECUADOR: Cotopaxi: Holm-Nielsen & Jeppesen 1147 (N).

VERBENA GLANDULIFERA Moldenke

Additional bibliography: Moldenke, Phytologia 23: 233--234. 1972; Troncoso, Darwiniana 18: 318 & 409. 1974.

VERBENA GLUTINOSA Kuntze

Additional synonymy: Glandularia glutinosa (O. Ktze.) Schn. & Cov. ex Troncoso, Darwiniana 18: 318. 1974.

Additional bibliography: Moldenke, Phytologia 28: 210 & 457. 1974; Troncoso, Darwiniana 18: 318. 1974.

VERBENA GOODDINGII Briq.

Additional bibliography: H. R. & B. Mockel, Mockel's Desert Flow. Book 258--259. 1970; Moldenke, Phytologia 28: 350 & 431. 1974.

Additional illustrations: H. R. & B. Mockel, Mockel's Desert Flow. Book 259. 1970.

Thorne found this species growing on dry rocky slopes with Pinus monophylla, Juniperus osteosperma, Prunus fasciculata, Yucca schidigera, Echinocereus spp., Opuntia spp., Ephedra, etc. in pinyon-juniper woodland, while Thorne & Tilforth encountered

it on dry rocky slopes in pinyon-juniper woodland with Juniperus osteosperma, Yucca baccata, Prunus fasciculata, Brickellia incana, Haplopappus linearifolius, Ephedra spp., Salvia spp., etc. The corollas are said to have been "purple" on Thorne & Tilforth 43934.

The Mockels (1970) refer to this species as the "Goodding Verbena" and comment that "This is a true verbena [in contrast to Abronia, the sand-verbenas], which is confined to elevations of 4000 to 6500 ft. The perennial is found in the mountains of the eastern Mohave Desert. It grows in isolated clumps and blooms during May. The flowers are typically clustered at the top of the stems, not many opening at the same time. Due to the plain background formed by desert shrubs, not in their prime in this location, the vividly colored clumps of the verbenas are pleasantly surprising and surely cannot be missed or overlooked. This land is used to graze cattle for no more apparent reason than that it is outdoors. Feed is scant and it must take 5 years to grow a yearling. Whatever isn't chewed off is trampled down, so the development of native flora is hard to follow. We have found this plant blooming at 4800 ft. in late September in southern Arizona".

The F. R. Fosberg 7911 specimen cited below is a transfer from the Pomona College herbarium.

Additional citations: CALIFORNIA: San Bernardino Co.: Thorne 43322 (N); Thorne & Tilforth 43934 (N). MEXICO: Sonora: F. R. Fosberg 7911 [915] (N).

VERBENA GRACILESCENS (Cham.) Herter

Additional bibliography: Moldenke, Phytologia 28: 350—351. 1974; Troncoso, Darwiniana 18: 309, 311, & 412, fig. 2. 1974.

Additional illustrations: Troncoso, Darwiniana 18: 309, fig. 2. 1974.

VERBENA GRACILIS Desf.

Additional bibliography: Voss in Vilm., Blumengärt., ed. 3, 1: 826. 1895; Moldenke, Phytologia 28: 212 & 256. 1974.

VERBENA GUARANITICA (Troncoso) Moldenke

Additional bibliography: Moldenke, Phytologia 28: 351. 1974; Troncoso, Darwiniana 18: 319 & 409. 1974.

VERBENA HALEI Small

Additional bibliography: Mahler, Fl. Taylor Co. 155 & 156. 1973; Moldenke, Phytologia 28: 351, 362, & 432. 1974; Stuckey & Wentz, Ohio Journ. Sci. 74: 34. 1974.

According to Stuckey & Wentz (1974) there is an isotype of V. leucanthemifolia Greene in the herbarium of Ohio State University: it was collected at Abilene, Texas, on May 19, 1902.

Eckhardt reports V. halei "locally frequent in rocky limestone loam of disturbed areas", while King found it growing in "fine sandy loam to clay loam", "in brown calcareous sandy loam to clay loam", and in "neutral fine sandy loam to clay loam on gentle

slopes". The corollas are said to have been "blue" on Eckhardt 982.

Demaree reports the species as "common" on poor clay ridges and wide roadsides in Arkansas; he also found it growing on rocky ridges and in river bottoms at altitudes of 220—715 feet. Mahler (1973) records the common name. "candelabra vervain".

The Moldenke & Moldenke 26908 specimen cited below is a transfer from the Bailey Hortorium herbarium.

Additional & emended citations: GEORGIA: Dougherty Co.: Moldenke & Moldenke 26908 (Kh). FLORIDA: Walton Co.: Moldenke & Moldenke 26734 (Mi). MISSISSIPPI: Jackson Co.: Skehan s.n. [Seymour & Earle 109a] (N). ARKANSAS: Clark Co.: Demaree 67824 (Ld). Hempstead Co.: Demaree 61670 (Ac). Howard Co.: Demaree 67147 (Ac, Ld, Tu). Montgomery Co.: Demaree 66412 (Ld). TEXAS: Coke Co.: W. King 320 (Mi), 459 (Ld), 689 (Ac). Tom Green Co.: Eckhardt 982 (Sl).

VERBENA HASSLERANA Briq.

Additional synonymy: Glandularia hasslerana (Briq.) Tronc., Darwiniana 18: 317. 1974.

Additional bibliography: Moldenke, Phytologia 28: 351, 441, 457, & 464. 1974; Troncoso, Darwiniana 18: 317, 319, 409, & 412. 1974.

Troncoso (1974) cites Krapovickas & al. 21608 from Corrientes, Argentina, and Pedersen 5234 from Paraguay, both deposited in the Darwinion herbarium at San Isidro, Argentina.

VERBENA HASTATA L.

Additional synonymy: Verbena americana altiss. spica multipl. urticaefol. angustis, fl. caeruleis Herm. ex Kloos, Nederl. Kruidk. Archief 1919: 96, in syn. 1919.

Additional & emended bibliography: Breyn., Prod. Fasc. Rar. Pl., ed. 1, 2: 104. 1688; L., Sp. Pl., ed. 1, imp. 1, 1: 20. 1753; L., Syst. Nat., ed. 10 [Stockh.], 2: 852 (1759) and ed. 10 [Halle], 2: 852. 1760; Ruíz & Pav., Fl. Peruv. & Chil. 1: 21. 1798; Michx., Fl. Bor.-Am., ed. 1, imp. 1, 2: 14. 1803; Branner & Coville, Ann. Rep. Geol. Surv. Ark. 1888 (4): [List Pl. Ark.] 210. 1891; L., Sp. Pl., ed. 1, imp. 2, 1: 20 (1907) and ed. 1, imp. 3, 1: 20. 1907; Georgia, Man. Weeds 344—345, fig. 238. 1914; M. R. Gilmore, Bur. Am. Ethnol. Ann. Rep. 33: 111, 144, 146, & 147. 1919; Kloos, Nederl. Kruidk. Archief 1919: 96—97. 1919; F. E. Clements, Pl. Succ. & Indicat. 375. 1928; Krause in Just, Bot. Jahresber. 48 (1): 635. 1929; L., Sp. Pl., ed. 1, imp. 4, 1: 20. 1934; Kamm, Old Time Herbs., imp. 1, 118. 1938; Demaree, Taxodium 1: 60. 1943; Weiss & O'Brien, Ind. Pl. Diseases U. S. 5: 1177 & 1178. 1953; Kamm, Old Time Herbs, imp. 2, 118. 1971; Wyman, Gard. Encycl., imp. 1, 1153 (1971) and imp. 2, 1153. 1972; Ebinger, Trans. Ill. Acad. Sci. 66: 119. 1973; Hegnauer, Chemotax. Pfl. 6 [Chem. Reihe 21]: 661. 1973; Hitchc. & Cronq., Fl. Pacif. Northw. 398 & 730, fig. 2a. 1973; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 786—788. 1973; Freder-

ick, Ohio Journ. Sci. 74: 111. 1974; Harkness, Seedlist Handb. 181. 1974; Howes, Dict. Useful Pl. 7 & 270. 1974; Jones & Bell, Trans. Ill. Acad. Sci. 67: 87. 1974; Lust, Herb Book, ed. 1, 126—127 & 440. 1974; Michx., Fl. Bor.-Am., ed. 1, imp. 2, 2 [Ewan, Class. Bot. Am. 3]: 14. 1974; Moldenke, Phytologia 28: 349, 351—352, 358, 359, 387, 401, 426, 427, 429, 430, 451, & 464. 1974; Rousseau, Géogr. Florist. Québ. [Trav. & Doc. Centr. Étud. Nord. 7:] 376, 473, 503, 550, 643, & 788. 1974; E. R. Spencer, All About Weeds [circular]. 1974; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [116]. 1975.

Additional & emended illustrations: Georgia, Man. Weeds 345, fig. 238. 1914; Camp, Boswell, & Magness, World in Your Gard., imp. 1, [83] (in color) (1957) and imp. 2, [83] (in color). 1959; Hitchc. & Cronq., Pl. Pacif. Northw. 398, fig. 2a. 1973; Straughsbaugh & Core, Fl. W. Va., ed. 2, 3: 787. 1973; Lust, Herb Book, ed. 1, 126. 1974.

Howes (1974) records the common name, "American blue vervain", for this species. Gilmore (1919) calls it the "wild blue verbena" and records the Dakota Amerind name "cha^{n}háloga pezhuta" and the Omaha Amerind name "pezhe maka^{n}". He states that among the Teton Dakotas the leaves were boiled for a drink as a remedy for stomachache, while the Omahas steeped the leaves just to make a beverage like tea. Chesnut (1902) reports that in Mendocino County, California, this species [most probably its var. scabra Moldenke] "grows in the greatest profusion in the swampy bottom lands of Round Valley, and furnishes the Concow Indians, who alone seem to use the plant, with an abundance of small seeds which are used for pinole."

Another common name recorded for the species is "hastateleaf vervain". Kloos (1919)records it as adventive in the Netherlands. Frederick (1974) records it from Champaign County, Ohio, but comments that it is there "Frequent only in bog meadow", flowering there in late August. Jones & Bell (1974) encountered it in Piatt County, Illinois, while Ebinger (1973) cites Ebinger 5802 from Coles County.

Weiss & O'Brien (1953) record the following pests and diseases from V. hastata in the United States: Erysiphe cichoracearum DC., a powdery mildew (general), Phyllosticta verbenicola G. Martin, a leaf-spot (in New Jersey), Puccinia vilfae Arth. & Holw., a rust (Indiana to Oklahoma and South Dakota), and Septoria verbenae Rob., a leaf-spot (Vermont to Mississippi, Texas, and South Dakota).

Harkness (1974) describes the corollas as "violet". Georgia (1914) tells us that if this species should become a "weed" "Small areas may be grubbed out or hand-pulled when the ground is soft; but land badly infested with this weed should be put under cultivation for a short rotation, in order that its perennial roots and dormant seeds may be cleaned from the soil."

The "E. W. Hart 4", cited in a previous installment of these notes, should have been cited as H. H. Marshall 4.

As stated previously, it is most probable that many, if not all, of the specimens cited as typical V. hastata from the western portions of North America, and the west-central portions as well, are actually var. scabra Moldenke, The following collections, previously cited by me as typical V. hastata, have been re-examined recently and prove to represent var. scabra instead: R. Adams s.n. [Sept. 8, 1871], Ballard s.n. [Swan Lake, July 1892], Beattie & Chapman 2188, Benke 368, H. F. Bergman 2335, Brenckle 42-532 & 4608, B. T. Butler 4292, Chesnut 584, J. H. Christ 5962, 6881, & 12958, Christ & Ward 8386, J. A. Clark 253, F. Clements 2719, J. H. Cowan 405, J. M. Cowan s.n. [July 11, 1893], Cronquist 1095, Degener & Degener 26129, Eastwood 41, English 477, Ferris & Duncan 3513, Gessel s.n. [July 29, 1939], M. L. Grant 3073, Grassl 2610, V. L. Harms 1107, B. F. Harrison 9217 & 11865, J. B. Hatcher s.n. [July 1886], Herb. State Agric. Coll. 2015, Hitchcock & Muhlick 21937, Holzinger s.n. [July 1901], W. H. Horr 4228, Jepson s.n. [Lower Sacramento, Sept. 1891], P. Johnson 545, E. L. Johnston 507a & 507b, M. E. Jones 523, T. S. Kellogg s.n. [August 1, 1888], Kreager 469, F. E. Lloyd s.n. [11 July 1894], Lunell s.n. [Butte, August 4, 1907], s.n. [August 28, 1911], & s.n. [August 5, 1914], J. F. Macbride 304, D. T. MacDougal 566, Macoun s.n. [Aug. 12th 1887], M. Maguire 20098, H. H. Marshall 4, W. F. Marshall 2016, McCosh s.n. [July-Aug. 1878], McCosh & Greene s.n. [Denver, Aug. 22, 1877], E. D. McDonald s.n. [July 11, 1940], R. L. McGregor 12699, Mearns 526, s.n. [August 31, 1891], F. P. Metcalf 427, Mulford s.n. [Boise, July '92], A. Nelson 2208, 2258, Osterhout s.n. [July 22, 1901], Over 14384, Edw. Palmer s.n. [1869], Parry, Bigelow, Wright, & Schott s.n. [near the Copper Mines], E. L. Reed 4034, Richardson & Robertson 1256, C. M. Rogers 4981, Rust 209, Rydberg 933 & 1515, Rydberg & Imler 1080, E. P. Sheldon S. 11167, Shunk & Manning 132, H. G. Smith s.n. [Denver, Aug. 1888], O. A. Stevens s.n. [Aug. 20, 1946], Suksdorf s.n. [prope Bingen, VII. 1904], Swallen s.n. [Douglas Lake, July 1924], Swingle s.n. [Three Forks, July 21, 1933], Terrell 1777, R. Thomson 158 & 302, Tidestrom 1718, Tweedy 2664, Van Bruggan 1365, Waterfall 2462, S. Watson 822, Wilkes s.n. [Lower Sacramento], R. S. Williams 692, T. A. Williams s.n. [Weeping Water], Wooton s.n. [Crain's Ranch, July 14, 1900], and Wright 553.

The Swingle s.n. [Manhattan, Aug. 3, 1887], distributed as V. hastata, is actually xV. rydbergii Moldenke.

Additional citations: MASSACHUSETTS: Franklin Co.: Poland s.n. [3 Aug. 1951] (N). NEW YORK: Chemung Co.: Moldenke & Moldenke 28840 (Gz, Kh, Tu). NEW JERSEY: Somerset Co.: Moldenke & Moldenke 28690 (Gz, Kh, Ld). PENNSYLVANIA: Susquehanna Co.: Moldenke & Moldenke 28788 (Ld). INDIANA: Greene Co.: Friesner 22294 (Mi).

VERBENA HASTATA var. SCABRA Moldenke

Additional bibliography: Chesnut, Contrib. U. S. Nat. Herb. 7: 383. 1902; Moldenke, Phytologia 28: 216, 218, & 429. 1974.

Chesnut (1902) speaks of this plant from Mendocino County, California, as V. hastata and reports that it "grows in the greatest profusion in the swampy bottom lands of Round Valley, and furnishes the Concow Indians, who alone seem to use the plant, with an abundance of small seeds which are used for pinole."

Collectors have found the plant growing in moist meadows, pastures, ditch banks, open woods, riverbeds, wet swamplands, marshes, riverbanks, fields in low ground, the edges of old channels, fencerows, and the edges of marshes and sloughs, on hills and sand hills, rocky riverbanks, in sandy soil of lake margins, weedy open areas by lakes, and sandy loam on creek banks, at altitudes of 440 to 7000 feet, flowering and fruiting from June to September. Maguire refers to it as a "common weed in wet places throughout [the] Cache Valley [Utah] along canal banks"; Marshall found it "not common in bottom of small ravine" in Manitoba. Hitchcock & Muhlick describe it as "several-stemmed, erect....calyx turning to greenish-purple".

Mearns asserts that it is "common in wet places" in Minnesota; Richardson & Robertson refer to it as "common in moist soil around lakes" in Nebraska; and Waterfall found it growing "near creek in old fields with Cephalanthus-Diospyros succession". Tidestrom refers to it as abundant along roadsides in Utah and Williams as common along roadsides in Nebraska. Harrison encountered it in boggy seeps associated with Salix amygdaloides, Juncus, Carex, and grasses; Beattie & Chapman found it to be "common" on hills in Washington, Rogers as "scattered in dampish soil" in Colorado, and McGregor as "scattered in moist ravines in sandy bluestem prairie pastures".

The corollas are said to have been "purple" on Hitchcock & Muhlick 21937 and "bluish-purple" on Mearns 526. Pollen samples were taken by M. Strick on January 20, 1972, from the V. L. Harms 1107 specimen in the Britton Herbarium. Common names for the plant reported are "American vervain" and "blue vervain".

Material of this variety has been almost uniformly identified in the past as V. hastata L., but occasionally a V. urticifolia L. because of the roughness of the leaves.

Additional citations: QUEBEC: Jacques Cartier Co.: Degener & Degener 26129 (N). MANITOBA: Lisgar Co.: H. H. Marshall 4 (N). VANCOUVER ISLAND: Macoun s.n. [Aug. 12th 1887] (C). IOWA: Jasper Co.: Van Bruggan 1365 (N). MICHIGAN: Cheboygan Co.: Swallen s.n. [Douglas Lake, July 1924] (W--1631173). Menominee Co.: Grassl 2610 (Mi, N). WISCONSIN: Brown Co.: T. S. Kellogg s.n. [De Pere, August 1, 1888] (W--259280). Calumet Co.: Benke 386 (W--1521469). MINNESOTA: Becker Co.: M. L. Grant 3073, in part (W--1487037); Terrell 1777 (W--2388680). Douglas Co.: E. D. McDonald s.n. [July 11, 1940] (W--1888485). Hennepin Co.: Mearns 526, in part (C). Le Sue-

ur Co.: Shunk & Manning 132 (W--1623243). Nicollet Co.: Ballard s.n. [Swan Lake, July 1892] (S, W--77393). Ottertail Co.: P. Johnson 545 (Bt--63945, Ky, N). Ramsey Co.: Mearns 526, in part (W--649507, W--649508), s.n. [Fort Snelling, July 11, 1891] (W--670316). Winona Co.: Holzinger s.n. [July 1901] (N). Yellow Medicine Co.: Brenckle 4608 (N). NORTH DAKOTA: Benson Co.: Lunell s.n. [Butte, August 4, 1907] (Du--75591, N, N), s.n. [Butte, August 28, 1911] (W--893168), s.n. [Pleasant Lake, August 5, 1914] (W--893169). McLean Co.: F. P. Metcalf 427 (W--1070875). Richland Co.: H. F. Bergman 2335 (N); O. A. Stevens s.n. [Kindred, Aug. 20, 1946] (W--1973378). Rolette Co.: Wright 553 (N). SOUTH DAKOTA: Fall River Co.: Rydberg 933 (W--210965). Roberts Co.: Over 14384 (W--1242262). Spink Co.: Brenckle 47-532 (N). Washabaugh Co.: Over 7079 (Se--14935). KANSAS: Franklin Co.: McGregor 12699 (W--2230403). Jefferson Co.: W. H. Horr 4228 (N). Scott Co.: V. L. Harms 1107 (N); Rydberg & Imler 1080, in part (N). MONTANA: Cascade Co.: R. S. Williams 692 (N). Gallatin Co.: D. B. Swingle s.n. [Three Forks, July 21, 1933] (Mi). Jefferson Co.: B. T. Butler 4292 (N). Ravalli Co.: Hitchcock & Muhlick 21937 (N). Wheatland Co.: R. Adams s.n. [Fish Creek, Sept. 8, 1871] (W--2359141). IDAHO: Ada Co.: Christ & Ward 8386 (N); J. A. Clark 253 (W--543438); Mulford s.n. [Boise, July '92] (C). Canyon Co.: J. F. Macbride 304 (W--542255). Kootenai Co.: Rust 209 (W--870175). Latah Co.: J. H. Christ 6881 (N). Lemhi Co.: J. H. Christ 5962 (N). Nez Perce Co.: J. H. Christ 12958 (N). WYOMING: Sheridan Co.: A. Nelson 2208 (N), 2258 (W--284732); Tweedy 2664 (N). County undetermined: McCosh s.n. [July-Aug. 1878] (Pr). UTAH: Cache Co.: Cronquist 1095 (N, Ua--47396); Gessel s.n. [July 29, 1939] (N, Ua--47394); C. B. Maguire 20098 (N, N, Ua--47395). Salt Lake Co.: S. Watson 822 (W--77395). Utah Co.: B. F. Harrison 9217 (W--1825701), 11865 (W--2098708); M. E. Jones 1487 (Br, Go, Po--70993, Sg--16089, Ua--11383); Tidestrom 1718 (S, W--507241). COLORADO: Denver Co.: Eastwood 41, in part (Bl--42319, Gg--31325, St--22946, W--582287); McCosh & Greene s.n. [Denver, Aug. 22, 1877] (Pr); H. G. Smith s.n. [Denver, Aug. 1888] (W--77396). Jefferson Co.: M. E. Jones 523 (Br, Du--151783, N, Po--70994, Ua--11382). Larimer Co.: J. H. Cowen 405 (W--254915); J. M. Cowan s.n. [July 11, 1893] (N); Herb. State Agric. Coll. 2015 (Fc, N, Vt, W--489491); W. F. Marshall 2016 (W--489492); Osterhout s.n. [July 22, 1901] (N, Po--63893). Las Animas Co.: C. M. Rogers 4981 (W--2053370). Weld Co.: E. L. Johnston 507a (N), 507b (W--768891). NEBRASKA: Cass Co.: T. A. Williams s.n. [Weeping Water] (W--750408). Dundy Co.: Richardson & Robertson 1256 (N). Hooker Co.: Rydberg 1515 (N, W--210370). Knox Co.: F. E. Clements 2719 (Ka, W--77394). Garden

Co.: R. Thomson 302 (N, W--789095). Sheridan Co.: J. B. Hatcher s.n. [July 1886] (Pr). County undetermined: R. Thomson 158 [Rat Lake] (W--788961). OKLAHOMA: Oklahoma Co.: Waterfall 2462 (N). TEXAS: Hemphill Co.: E. L. Reed 4034 (W--1697865). Oldham Co.: Ferris & Duncan 3513 (N). NEW MEXICO: Dona Ana Co.: Parry, Bigelow, Wright, & Schott s.n. [Valley of the Rio Grande] (W--77399). Socorro Co.: Wooton s.n. [Crain's Ranch, July 14, 1900] (N). ARIZONA: Coconino Co.: D. T. MacDougal 566 (N). County undetermined: Edw. Palmer s.n. [Arizona, 1869] (W--77400). WASHINGTON: Clark Co.: English 477 (W--1620266). Klickitat Co.: Suksdorf s.n. [prope Bingen, VII.1904] (N). Okanogan Co.: Dillon 842 (Ca--739564, Pl--151100, Se--94450). Stevens Co.: Beattie & Chapman 2188 (W--1871410); Kreager 469 (N, Pl--22577, Se--68697, Um--225, W--441285). Yakima Co.: L. F. Henderson s.n. [June 19, '92] (Se-14943). OREGON: Linn Co.: F. E. Lloyd s.n. [11 July 1894] (N). Multnomah Co.: E. P. Sheldon 11167 (Du--96562, Du--104990, Pl--22573), S.11167 (N, Po--70995). CALIFORNIA: Mendocino Co.: Chesnut 584 (W--430636). Sacramento Co.: Jepson s.n. [Lower Sacramento, Sept. 1891] (C); Wilkes s.n. [Lower Sacramento] (W--77398).

VERBENA HISPIDA Ruíz & Pav., Fl. Peruv. & Chil. 1: 22--23, pl. 34a, fig. 1--5. 1798.

Additional & emended bibliography: Ruíz & Pav., Fl. Peruv. & Chil. 1: 22--23, pl. 34a, fig. 1--5. 1798; Moldenke, Phytologia 28: 352--353, 362, 380, 446, & 451. 1974; Troncoso, Darwiniana 18: 310, 311, & 412. 1974.

Emended illustrations: Ruíz & Pav., Fl. Peruv. & Chil. 1: pl. 34a, fig. 1--5. 1798.

Troncoso (1974) cites Pedersen 4018 from Paraguay, Hicken 16 from Valparaiso, Chile, Buchtien s.n. [Cotaña am Ihmani; Herb. Inst. Darwinion 3387] from Bolivia, and Venturi 825 from Tucumán, Argentina, all in the Darwinion herbarium at San Isidro.

VERBENA HOOKERIANA (Covas & Schnack) Moldenke

Additional bibliography: Moldenke, Phytologia 28: 353. 1974; Troncoso, Darwiniana 18: 315, 317, 318, & 409. 1974.

Troncoso (1974) cites Cabrera & al. 16760 from Catamarca, Argentina, in the Darwinion herbarium at San Isidro, Argentina.

xVERBENA HYBRIDA Voss

Additional synonymy: Verbena hybrida Hort. ex Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1045. 1879. Verbena hybrida var. auriculaeflora Hort. ex Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1046. 1879. Verbena hybrida var. striata Hort. ex Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1046--1047. 1879. Verbena teucriodes x phlogiflora Voss in Vilm., Blumengärt., ed. 3, 1:

827. 1895. Verbena hybrida unicolor Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida unicolor f. atropurpurea Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida unicolor f. atrosanguinea Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida unicolor f. atroviolacea Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida unicolor f. candidissima Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida unicolor f. coccinea Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida unicolor f. coerulea Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida unicolor f. compacta Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida unicolor f. cupreata Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida unicolor f. erecta Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida unicolor f. foliis aureis Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida auriculaeflora Boss ex Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida auriculaeflora f. carminea Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida auriculaeflora f. cinnabarina Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida auriculaeflora f. coccinea Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida auriculaeflora f. coerulea Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida auriculaeflora f. nigroviolacea Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida auriculaeflora f. oculata Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida auriculaeflora f. violacea Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida striata Voss in Vilm., Blumengärt., ed. 3, 1: 828. 1895. Verbena hybrida oculata Hort. ex Voss in Vilm., Blumengärt., ed. 3, 1: 828, in syn. 1895. Verbena hybrida auriculaeflora f. stellata carminea Hort. ex Voss in Vilm., Blumengärt., ed. 3, 1: 828, in syn. 1895. Verbena hybrida auriculaeflora f. stellata violacea Voss in Vilm., Blumengärt., ed. 3, 1: 828, in syn. 1895. Verbena hybrida Vossler, in herb.

Additional bibliography: Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1045--1047. 1879; Voss in Vilm., Blumengärt., ed. 3, 1: 825 & 827--829, pl. 49. 1895; Kamm, Old Time Herbs, imp. 1, 121. 1938; Weiss & O'Brien, Ind. Pl. Diseases U. S. 5: 1177 & 1178. 1953; W. H. Camp in Camp, Boswell, & Magness, World in Your Gard., imp. 1, 82 & [83] (1957) and imp. 2, 82 & [83]. 1959; Booth, Encycl. Ann. & Bien. Pl. 439--440. 1962; A. P. Balf., Ann. & Bien. Fls. 85--86. 1963; Kamm, Old Time Herbs, imp. 2, 121. 1971; Wyman, Gard. Encycl., imp. 1, 49, 336, 493, & 1153 (1971) and imp. 2, 49, 336, 493, & 1153. 1972; Fogg, Dict. Ann. Pl. 164. 1972; D. Burpee, Burpee Seeds 1975: 48. 1974; Moldenke, Phytologia 29: 343, 353, 361, 369, 371, 380, 444, 451, & 464. 1974.

Additional & emended illustrations: Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1045 & 1046. 1879; Voss in Vilm., Blumengärt., ed. 3, 1: 828, pl. 49. 1895; D. Burpee, Burpee Seeds 1975: 48 (in color). 1974.

Ruiz-Terán & López-Palacios refer to this plant as a "Sufrútice cultivado como ornamental, más o menos cespitoso. Flores de color muy variable: blancas, blanco-rosáceas, rosadas, rojo intensas, ametistinas etc.", flowering in September in Venezuela.

Voss (1895) gives an excellent description of the cultivated varieties and forms of this plant as they existed in his day. He claims that they arose from three crosses: (1) V. peruviana and V. phlogiflora giving rise to the "Einfarbige oder Scharlach-Verbenen" which he classifies as V. hybrida unicolor, (2) V. platensis and V. phlogiflora giving rise to the "Aurikelblütige oder Geäugelte Verbenen" which he calls V. hybrida auriculaeflora, and (3) V. tenera and V. incisa giving rise to the "Bunte oder Italienische Verbenen" which he calls V. hybrida striata. Descriptions are given in the work cited for all his Latin-named forms and he also describes forms known in the trade then as "Apotheker Kofler", "Baumeister Schneller", "Baronin von Bohlen", "Défiance", "Dr. Pressel", "Eugen Vaucher", "F. A. Laydig", "Frau Direktor Kreuser", "Frau Direktor Schindler", "Frau Dr. Gutzwiller", "Frau Dr. Kayser", "Frau Otto Grüner", "Freiherr von Schönau", "Fr. Ruoff", "Fürst Bismarck", "Graf von Türkheim", "Helgoland", "Klothilde Pfitzer", "Marie Maréchal", "Nordlicht", "Schwan", "Th. Mayer", and "Uranie".

Weiss & O'Brien (1953) describe the plant as a "Cultigen derived from V. teucrioides Gill. & Hook. and other spp. of South America; widely grown for ornament as a summer annual in the North [of the United States], as winter annual or perennial in the South."

Listed as pests and diseases of the plant in the United States are: Botrytis cinerea Pers., a flower-blight (in Massachusetts), Erysiphe cichoracearum DC., a powdery mildew (general), Meloidogyne sp. [Heterodera marioni (Cornu) Goodey], a root-knot nematode (Maryland), Phymatotrichum omnivorum (Shear) Dug., a root-rot (Texas), Rhizoctonia solani Kuehn, a root-rot (New York), Sclerotium bataticola Taub., a charcoal stem-rot (Oklahoma), Sphaerotheca humuli (DC.) Burr., a powdery mildew (Puerto Rico), and Thielaviopsis basicola (Berk. & Br.) Ferr., a root-rot (Pennsylvania).

Balfour (1963), in speaking of this plant in England, says that "Garden verbena[s] have arisen from the inter-crossing of various South American species and, although strictly speaking perennials, are best treated as half-hardy annuals. In the old days verbenas were always propagated by cuttings taken in the spring, but the great improvement in seedling strains both in trueness to colour and compactness of habit renders this unneces-

sary.....Modern strains of verbena form compact bushy plants 12--15 inches high and as much across and have a very wide range of colours, white, shades of pink, mauve, purple, and rich blue, mostly coming remarkably true from seed. The finest are the Large-flowered or Mammoth section. There is also a Dwarf compact strain 9 inches in height with small flower heads and a full range of colours. Flowering begins in June [in England] and lasts until stopped by frosts in autumn.....Verbena should be sown under glass in February, pricked out into trays as soon as fit to handle, hardened off in cold frames, and planted out in May. They prefer a rich, well-drained loam and love sunshine with sufficient moisture in the early stage of growth. Thrips are apt to be troublesome, so much so that a preventive spraying with nicotine or other convenient insecticide is often advisable in the early stages after planting out."

Fogg (1972) says "They are usually grouped into three sections, small flowered, giant flowered and the compact or bushy form. On the first section there are many auricula eyed varieties including a mixed strain listed as Royal Bouquet. The grandiflora or large flowered group is represented by well known varieties such as 'Ellen Willmott', salmon rose but variable; 'Lavender Queen' (or Glory) and 'Scarlet Queen'. The dwarf compact section takes in 'Fireball', scarlet; 'Salmon Queen'; 'Sparkle', scarlet and 'Violet Bouquet'."

Additional citations: CULTIVATED: Venezuela: Ruiz-Terán & Lopez-Palacios 7602 (Ld).

xVERBENA ILLICITA Moldenke

Additional bibliography: Jones & Bell, Trans. Ill. Acad. Sci. 67: 87. 1974; Moldenke, Phytologia 28: 353. 1974.

Jones & Bell (1974) record this hybrid from Piatt County, Illinois.

VERBENA INAMOENA Briq.

Additional bibliography: Moldenke, Phytologia 23: 278. 1972; Troncoso, Darwiniana 18: 310, 311, & 412. 1974.

Troncoso (1974) cites T. Rojas 1880 from Paraguay in the Darwinion herbarium at San Isidro.

VERBENA INCISA Hook.

Additional bibliography: Voss in Vilm., Blumengärt., ed. 3, 1: 827, 1895; Cooke, Fl. Presid. Bombay, ed. 1, 3: 436--437 (1906), ed. 2, imp. 1, 2: 517 (1958), and ed. 2, imp. 2, 2: 517. 1967; Moldenke, Phytologia 28: 354 & 369. 1974; Troncoso, Darwiniana 18: 316, 319, & 409, fig. 3 m--o. 1974.

Additional illustrations: Troncoso, Darwiniana 18: 316, fig. 3 m--o. 1974.

Troncoso (1974) cites Hicken s.n. [Puerto Nuevo; Herb. Inst. Darwinion 3450] from Entre Ríos, Argentina, in the Darwinion herbarium at San Isidro, Argentina.

Cooke (1906) describes the plant as "A pretty little creeping

annual with irregularly and coarsely toothed leaves and rosy flowers resembling those of the garden Verbena but smaller. Flowers during January and February [in India] and often springs up from self-sown seeds." Jafri & Ghafoor, in their unpublished Flora of Pakistan treatment of this group, cite S. P. Bahl s.n., cultivated in the Pakistani part of Punjab, noting that the species is "Sometimes cultivated in gardens, as an ornamental, for its handsome blossoms of a deep-rose colour".

Additional citations: ARGENTINA: Santa Fé: Hubrich 54 (Mu).

VERBENA INTERMEDIA Gill. & Hook.

Additional synonymy: Verbena bonariensis f. gracilis (Cham.) Voss in Vilm., Blumengärt., ed. 3, 1: 826 [as "f. gracilis Cham"]. 1895.

Additional bibliography: Voss in Vilm., Blumengärt., ed. 3, 1: 826. 1895; Moldenke, Phytologia 28: 354 & 464. 1974; Troncoso, Darwiniana 18: 310, 311, & 412. 1974.

Pedersen encountered this plant in "medium dry grassland" in Paraguay, while Quarín and his associates found it "in lomas, pastizales". The corollas are said to have been "violet" in color on Pedersen 7680. Troncoso (1974) cites Cano 3103 from La Pampa, Argentina, deposited in the Darwinion herbarium at San Isidro.

Additional citations: PARAGUAY: Pedersen 7680 (W--2683131). ARGENTINA: Corrientes: Quarín, González, & Ishikawa 1832 (Ld).

VERBENA KUNTZEANA Moldenke

Additional synonymy: Glandularia kuntzeana (Mold.) Tronc., Darwiniana 18: 319. 1974.

Additional bibliography: Moldenke, Phytologia 23: 281 & 457. 1972; Troncoso, Darwiniana 18: 319 & 409. 1974.

VERBENA LACINIATA (L.) Briq.

Additional & emended synonymy: Verbena erinodes Lam. ex Voss in Vilm., Blumengärt., ed. 3, 1: 826. 1895. Erinus laciniatus L. ex Voss in Vilm., Blumengärt., ed. 3, 1: 826, in syn. 1895. Verbena pulcherrima Hort. ex Voss in Vilm., Blumengärt., ed. 3, 1: 826. 1895.

Additional bibliography: Kümpler in Vilm., Illustr. Blumeng., ed. 2, 1043. 1879; Voss in Vilm., Blumengärt., ed. 3, 1: 825 & 826. 1895; Booth, Encycl. Ann. & Bien. Gard. Pl. 439 & 440. 1962; A. P. Balf., Ann. & Bien. Fls. 85. 1963; Wyman, Gard. Encycl., imp. 1, 1153 (1971) and imp. 2, 1153. 1972; Moldenke, Phytologia 28: 345, 349, 354, 375, 451, & 460. 1974.

Voss (1895) includes Verbena selloi Spreng. and Shuttleworthia selloi Walp. in the synonymy of V. laciniata, by V. selloi is now regarded as a separate and valid species with Shuttleworthia selloi in its synonymy. He also places Verbena multifida Hort. in the synonymy of V. tenera Spreng., rather than in that of V. laciniata. He includes V. geraniifolia Hort. in the synonymy of

V. laciniata, but I place it in that of V. tenera. He gives as common names for V. laciniata the German vernaculars "Leberbalsamartiges Eisenkraut" and "schönstes Eisenkraut" and the English "prettiest vervain".

VERBENA LACINIATA var. CONTRACTA (Lindl.) Moldenke

Additional synonymy: Verbena erinodes f. sabini (Sweet) Voss in Vilm., Blumengärt., ed. 3, 1: 826 [as "f. sabini Sw."]. 1895. Verbena multifida f. contracta Lindl. ex Voss in Vilm., Blumengärt., ed. 3, 1: 826, in syn. 1895.

Additional bibliography: Voss in Vilm., Blumengärt., ed. 3, 1: 826. 1895; Moldenke, Phytologia 28: 247—249 & 451. 1974.

Voss (1895) describes this variety as "hat 3teilige Blätter, deren Teile tiefeingeschnitten-fiederspaltig, die letzten aber linealisch-länglich und spitz sind. Blüten dunkelviolett oder lilafarbig und die Pflanzen etwas niedriger."

VERBENA LASIOSTACHYS Link

Additional bibliography: Moldenke, Phytologia 28: 249—250, 362, & 431. 1974.

The Reinecke s.n. [September 5, 1937], distributed as V. lasiostachys, is actually var. septentrionalis Moldenke.

VERBENA LASIOSTACHYS var. SEPTENTRIONALIS Moldenke

Additional bibliography: Moldenke, Phytologia 28: 249—250 & 362. 1974.

Denton found this plant to be "common in wet seepage among oaks" in lowland deciduous forests composed mostly of Quercus, Holodiscus, Pseudotsuga, and Calocedrus".

Additional citations: OREGON: Josephine Co.: Denton 2462 (N). CALIFORNIA: Monterey Co.: Reinecke s.n. [September 5, 1937] (Mi).

VERBENA LILACINA Greene

Additional bibliography: Moldenke, Phytologia 28: 250. 1974.

Additional citations: MEXICO: Baja California: R. Moran 17185 (Mi).

VERBENA LITORALIS H.B.K.

Additional bibliography: Demaree, Taxodium 1: 60. 1943; J. Moon, Living with Nat, Haw. 52. 1971; Moldenke, Phytologia 28: 347, 354—355, 362, 432, 435, & 438. 1974; Troncoso, Darwiniana 18: 308, 310, 311, & 412. 1974; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [116]. 1975.

Additional illustrations: J. Moon, Living with Nat. Haw. 52. 1971.

Ruiz-Terán & López-Palacios describe this plant as an "Hierba sufruticulosa, erecta, inerme, 80 cm. Flores morado claras".

Solbrig and his associates describe this plant as "common in overgrazed areas" on the Juan Fernandez Islands. Moon (1971) records the Hawaiian names, "Cayenne vervain" and "valena", for the plant and note that in those islands it is used in the treat-

ment of "sprains and broken bones.....mash green leaves with rock salt, rub on swellings 4 times morning and night, wrap and keep warm.....Grows 2--5 ft. high, hairy stem and leaves, flowers blue-violet.....the leaves make good tea to drink."

Holm-Nielsen & Jeppesen found this plant growing on "exposed southern slopes by [a] small brook" in Ecuador. The corollas on Duque-Jaramillo 2632 are described as having been "bluish" when fresh.

Additional citations: COLOMBIA: Caldas: Duque-Jaramillo 2632 (N). VENEZUELA: Trujillo: Ruiz-Terán & López-Palacios 7400 (Ld). Yaracuy: H. M. Curran 135am (N). ECUADOR: Tunguragua: Holm-Nielsen & Jeppesen 158 (N). JUAN FERNANDEZ ISLANDS: Masafuera: Solbrig, Moore, & Walker 3664 (W--2531340).

VERBENA LOBATA Vell.

Additional bibliography: Moldenke, Phytologia 28: 355. 1974; Troncoso, Darwiniana 18: 310, 311, & 412. 1974.

Troncoso (1974) cites Ule 1173 from Santa Catarina, Brazil, deposited in the Munich herbarium.

VERBENA MACDOUGALII Heller

Additional bibliography: Moldenke, Phytologia 28: 355 & 431. 1974; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [116]. 1975.

Blakley asserts that he found only a "few, local" specimens of this species growing in granite loam soil along roadsides in New Mexico.

Additional citations: NEW MEXICO: Catron Co.: E. R. Blakley B-616 (N).

VERBENA MACROSPERMA Speg.

Synonymy: Glandularia macrosperma (Speg.) Tronc., Darwiniana 18: 317. 1974.

Additional bibliography: Moldenke, Phytologia 28: 254, 441, & 457. 1974; Troncoso, Darwiniana 18: 317, 318, 409, & 412. 1974.

Troncoso (1974) cites Schajovskoy s.n. [Saffico; Herb. Inst. Darwinion 26740] from Neuquén, Argentina, deposited in the Darwinion herbarium.

VERBENA MARRUBIOIDES Cham.

Additional synonymy: Glandularia marrubioides Cham. ex Troncoso, Darwiniana 18: 319. 1974.

Additional bibliography: Moldenke, Phytologia 28: 254--255 & 457. 1974; Troncoso, Darwiniana 18: 319 & 409. 1974.

Additional citations: BRAZIL: Paraná: Hatschbach 17120 (Ld).

VERBENA MEDICINALIS Rojas, Cat. Hist. Nat. Corr. 206, nom. nud. 1897.

Bibliography: Rojas Acosta, Cat. Hist. Nat. Corr. 206. 1897; Krapovickas, Bol. Soc. Argent. Bot. 11: 269. 1970.

Nothing is known to me about this taxon except what is stated in the bibliography. It is apparently supposed to be a native of Corrientes, Argentina.

VERBENA MEGAPOTAMICA Spreng.
Additional bibliography: Moldenke, Phytologia 28: 355, 370, 384, 451, 457, & 464. 1974; Troncoso, Darwiniana 18: 319 & 409. 1974.

VERBENA MENDOCINA R. A. Phil.
Additional bibliography: Moldenke, Phytologia 28: 255. 1974; Troncoso, Darwiniana 18: 318 & 409. 1974.

VERBENA MICROPHYLLA H.B.K.
Additional bibliography: Moldenke, Phytologia 28: 356 & 366. 1974; Troncoso, Darwiniana 18: 318 & 409. 1974.

VERBENA MONTEVIDENSIS Spreng.
Additional bibliography: Moldenke, Phytologia 28: 351 & 356. 1974; Troncoso, Darwiniana 18: 311 & 412. 1974.
Demaree found this species as "a very few big plants in waste area" in Arkansas and this is the first record of the species from that state. The plants were in flower and fruit there in September. The corollas are said to have been "white" on Schinini 7792.
Additional citations: ARKANSAS: Ashley Co.: Demaree 67598 (Ld). ARGENTINA: Corrientes: Schinini 7792 (Ld).

VERBENA MONTICOLA Moldenke, Phytologia 29: 193. 1974.
Bibliography: Moldenke, Phytologia 29: 193. 1974.
Citations: PERU: La Libertad: Lopez M. 8079 (N--type).

VERBENA MORICOLOR Moldenke
Additional synonymy: Glandularia moricolor Solbrig, Princ. & Meth. Pl. Biosystem. 76. 1970. Glandularia moricolor (Mold.) Troncoso, Darwiniana 18: 319. 1974.
Additional bibliography: Moldenke, Phytologia 28: 257--258, 369, & 457. 1974; Troncoso, Darwiniana 18: 319, 409, & 412. 1974.

VERBENA MULTIGLANDULOSA Moldenke
Additional bibliography: Moldenke, Phytologia 23: 373. 1972; Heslop-Harrison, Ind. Kew. Suppl. 15: 142. 1974.

VERBENA NANA Moldenke
Additional synonymy: Glandularia nana (Mold.) Troncoso, Darwiniana 18: 319. 1974.
Additional bibliography: Moldenke, Phytologia 28: 258 & 457. 1974; Troncoso, Darwiniana 18: 319, 409, & 412. 1974.

VERBENA NEOMEXICANA (A. Gray) Small
Additional bibliography: Moldenke, Phytologia 28: 356. 1974.
The Engard, Getz, & Foster 202, distributed as V. neomexicana,

is actually var. xylopoda Perry, while Eckhardt 327 & 675 are V. plicata Greene.

Additional citations: ARIZONA: Cochise Co.: Wentworth 1061 (N), 1949 (It).

VERBENA NEOMEXICANA var. HIRTELLA Perry

Additional bibliography: Moldenke, Phytologia 28: 356—357. 1974.

Dunn encountered this plant in creosote-bush areas.

Material of this taxon has been misidentified and distributed in some herbaria as V. canescens var. roemeriana (Scheele) Perry and as "Labiatae". On the other hand, the Eckhardt 380, identified as this variety, is actually V. canescens var. roemeriana.

Additional citations: TEXAS: Presidio Co.: D. B. Dunn 16070 (N); Hinckley 1971 (W—2232458); Lundell & Lundell 14340 (Mi).

VERBENA NEOMEXICANA var. XYLOPODA Perry

Additional bibliography: Moldenke, Phytologia 28: 258 & 259. 1974.

Engard and his associates found this plant growing on a steep, rocky, chaparral-covered, northeast-facing slope, flowering and fruiting in April.

Additional citations: ARIZONA: Cochise Co.: Wentworth 53L (It). Yavapai Co.: Engard, Getz, & Foster 202 (N).

VERBENA NIGRICANS Rojas, Cat. Hist. Nat. Corr. 173, nom. nud. 1897.

Bibliography: Rojas Acosta, Cat. Hist. Nat. Corr. 173. 1897; Krapovickas, Bol. Soc. Argent. Bot. 11: 269. 1970; Heslop-Harrison, Ind. Kew. Suppl. 15: 142. 1974.

Nothing is known to me about this species except what is given in the bibliography. It is supposed to be a native of Corrientes, Argentina.

VERBENA OFFICINALIS L.

Additional synonymy: Verbena fficinalis L., Sp. Pl., ed. 1, imp. 1, 1: 20, sphalm. 1753.

Additional & emended bibliography: Anon., Breviary [mss. on vellum, Pierpont Morgan Libr.] 32 & 37. 15—; Piperno, De Magicis Affect. 1635; L., Sp. Pl., ed. 1, imp. 1, 1: 20—21. 1753; L., Syst. Nat., ed. 10 [Stockh.], 2: 852 (1759) and ed. 10 [Halle], 2: 852. 1760; Ruiz & Pav., Fl. Peruv. & Chil. 1: 21 & 22. 1798; Michx., Fl. Bor.-Am., ed. 1, imp. 1, 2: 14—15. 1803; J. Grah., Cat. Pl. Bomb. 154. 1839; Jenner, Fl. Tunbridge Wells 33. 1845; J. Sm., Dict. Pop. Names Pl. 428. 1882; G. Ricci, Lo Sperimant. 66: 483. 1890; Dymock, Warden, & Hooper, Pharmacog. Ind. 3: [iii] & 58—60. 1893; Woodr., Journ. Bomb. Nat. 12: 359. 1899; Collett, Fl. Siml. 379. 1902; Cooke, Fl. Presid. Bombay, ed. 1, 3: 437. 1906; Kirby, Brit. Flow. Pl. 116, pl. 74. 1906; L., Sp. Pl., ed. 1, imp. 2, 1: 20—21 (1907) and ed. 1, imp. 3, 1: 20—21. 1907; F. Hermann, Fl. Deutschl. & Fennoskand. 387. 1912;

Georgia, Man. Weeds 343. 1914; Kloos, Nederl. Kruidk. Archief 1919: 96 & 97. 1919; Rohde, Old Engl. Herbals, imp. 1, 29, 30, 43, 44, 64, 72, 106, 107, & 113. 1922; Knoche, Fl. Balear., ed. 1, 252, 275, 293, 339, & 410. 1923; Parodi, Rev. Fac. Agron. & Vet. B. Aires 5: 138--139. 1926; L., Sp. Pl., ed. 1, imp. 4, 1: 20—21. 1934; Joshi in Kashyap, Lahore Dist. Fl. 193 & 194, fig. 165. 1936; Zangheri, Fl. & Veg. Pinet. Raven. 189, 235, & 271. 1936; Kamm, Old Time Herbs, imp. 1, 118--121. 1938; Glover, Prov. Check List Brit. & Ital. Somali. 268. 1947; Jovet, Valois Phytosoc. & Phytogéogr. 241, pl. 68. 1949; L., Sp. Pl., ed. 1, imp. 5, 1: 20—21. 1957; Steinmetz, Cod. Veget. 1189. 1957; Cooke, Fl. Presid. Bombay, ed. 2, imp. 1, 2: 517. 1958; Font Quer, Pl. Medic. 635. 1962; Engel, Fl. Magica 39. 1966; Cooke, Fl. Presid. Bombay, ed. 2, imp. 2, 2: 517. 1967; J. Graf, Pfl. Bestimm. 159. 1967; J. Hutchinson, Evol. & Phylog. Flow. Pl. 468, 470, & 715, fig. 414. 1969; Abbayes, Claustres, Corillon, & Dupont, Fl. & Veg. Mass. Armor. 662. 1971; Kamm, Old Time Herbs, imp. 2, 118--121. 1971; Perrot & Paris, Pl. Médic. 1: 103, fig. 8—13. 1971; Rohde, Old Engl. Herbals, imp. 2, 29, 30, 43, 44, 64, 72, 106, 107, & 113. 1971; Dymock, Warden, & Hooper, Hamdard 15: 330 & 345. 1972; H. L. V. Fletcher, Herbs 134 & 135. 1972; Cvančara & Šourková, Preslia 45: 272. 1973; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 786 & 787. 1973; Beaugé, Chenop. Alb. 351 & 429, fig. 60. 1974; Dony, Perring, & Rob, English Names Wild Fls. 61 & 116. 1974; Fenaroli, Rivist. Ital. 56: 224. 1974; Fitter, Fitter, & Blamey, Wild Fls. Brit. & N. Eu. 192 & 193, fig. 7. 1974; Hegnauer, Chemotax. Pfl. 6 [Chem. Reihe 2]: 661, 663, & 676. 1973; Howes, Dict. Useful Pl. 125 & 270. 1974; Hylton, Rodale Herb Book 613--614. 1974; Knoche, Fl. Balear., ed. 2, 252, 275, 293, 339, & 410. 1974; Lust, Herb Book, ed. 1, 181--182, 549, 561, & 588. 1974; Michx., Fl. Bor.-Am., ed. 1, imp. 2, 2 [Ewan, Class. Bot. Am. 3]: 14--15. 1974; Moldenke, Phytologia 28: 357—365, 380, 381, 392, 393, 401, 427, 443, 444, & 464. 1974; J. P. Morgan Library, Flowers of Centuries Cat. 60 & 68. 1974; Ross-Craig, Drawings Brit. Pl. Ind. 36. 1974; Sunding, Gaveia Ort. Bot. 2: 20. 1974; Troncoso, Darwiniana 18: 308, 310, 311, & 412. 1974; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [116]. 1975.

Additional illustrations: Anon., Breviary [mss. on vellum, Pierpont Morgan Libr.] 32 & 37. 15—; Joshi in Kashyap, Lahore Dist. Fl. 193, fig. 165. 1936; J. Graf, Pfl. Bestimm. 159. 1967; J. Hutchinson, Evol. & Phylog. Flow. Pl. 470, fig. 414. 1969; Perrot & Paris, Pl. Médic. 1: fig. 8--13 (in color). 1971; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 787. 1973; Fitter, Fitter, & Blamey, Wild Fls. Brit. & N. Eu. 193, fig. 7 (in color). 1974; Lust, Herb Book, ed. 1, 181. 1974.

Jenner (1845) reports the species as "common near houses, roadsides, waste places" in England, flowering in July. Sunding (1974) records it from Santiago Island in the Canaries. Perrot & Paris (1971) record an additional French vernacular name, "Herbe à tous maux". The corollas are said to have been "blue" on S. Y. Hu 5732 and "lavender" on S. Y. Hu 10350.

Cooke (1906) says of this plant: "A native of the Himalayas and Bengal, sometimes found as a weed in gardens [in Bombay]. It has variously lobed leaves and small blue flowers in terminal spikes."

Steinmetz (1957) lists the following additional vernacular names: "columbaria", "horse-whip", "lung-ya-ts'ao", "ma-pien-ts'ao", "mineçiçeği", and "pamukh", as well as the pharmaceutical names "Radix Verbonae" and "Herba Verbenae". He lists as among its chemical constituents: tannic acid (a peculiar tannin), invertin, saponin, verbenalin (verbenaloside), verberin, and emulsin. He lists for its properties: "herb: corroborant, nervine, antispasmodic, febrifuge, tonic, aphrodisiac, antiscorbutic, galactagogue, detersive, astringent, emetic, sudorific, diuretic, used in whooping-cough".

As indicated in the bibliographic addenda above, the species is depicted on pages 32 and 37 of a Breviary — existing in manuscript form on vellum — produced early in the 16th century at Bruges, probably by a man or men from Portugal. The p. 32 illustration appears to be original, but that on p. 37 depicts a garland worn by a Roman priest and was apparently taken from one of the works of Macer Floridus in about 1500 A.D.

The index in Beaugé's work (1974) indicates that this plant is mentioned on page "251", but I fail to find it there; it occurs on page 351.

Lust (1974) says of the reputed medicinal uses of this plant that "The whole plant" is used as an "Astringent, diuretic, emmenagogue, galactogogue, stimulant, tonic, vulnerary. In addition to the normal uses indicated by the categories, the decoction is said to be good for eczema and other skin conditions. It has also been used for whooping cough, dropsy, jaundice, and kidney and liver problems. An infusion or decoction is used to help heal wounds. European vervain is considered by some to be an aphrodisiac, and it is said to secure the favor of the ladies. Preparation and Dosage: Cold Extract: Use 1 tbsp. of the plant with 1 cup water; let stand for 8 to 10 hours. Take 1 cup a day. Powder: Take 1/4 to 1/2 tsp. three times a day. Tincture: Take 20 to 40 drops in water, as needed." Hylton (1974) comments that "Vervain has been used as a tonic, diaphoretic, and expectorant, but no strong claims have ever been made as to its efficacy. In China, it is used to induce menstruation, to relieve rheumatism, and as an astringent and vermifuge.....Historically, the plant has been associated with sorcerers, witches, and magic. In ancient times, it was bruised and worn about the neck as a charm against headaches and venomous bites. An old legend reputes the vervain to have been used to staunch the wounds of Christ on Calvary."

If this plant becomes a "weed", Georgia (1914) says "Prevent seed production by close cutting or pulling while the plant is in early bloom."

Jafri & Ghafoor, in their unpublished portion of the Flora of Pakistan, comment that this plant is "Fairly common near water in waste lands and cultivated fields in northern and western parts of

Pakistan, between 500—2000 m. Leaves are used as a febrifuge and tonic and root is a cure for scorpion and snake bite." They record the vernacular names "karenta" and "pamukh" and assert that its flowering period in Pakistan is June to December.

It is of considerable interest to note that Linnaeus (1753) regarded the New World specimens of this species as a separate taxon, V. spuria L. He claimed that the European plant (with which he was certainly very well acquainted in the living state!) has only single stems, while the American plants ["Habitat in Canada, Virginia"] have numerous stems. This point should be investigated.

Kamm (1938) claims that V. officinalis "has now gone wild and become a pernicious weed locally in cultivated fields from Maine to Texas". In a lifetime of botanical field work, also from Maine to Texas, my wife and I have seen no cases where this species has become such a "pernicious weed". In our experience, it is of very rare occurrence in the New World. Many of the New World plants formerly so identified are actually V. riparia Raf., V. halei Small, V. domingensis Urb., V. menthaefolia Benth., and V. gracilescens (Cham.) Herter.

Joshi (1936) reports V. officinalis from "In waste places and as a garden weed; common" in Lahore, Pakistan.

Dymock and his associates (1972) add some more details to the already very copious lore about this plant when they recount that "Pliny.....says....with this...the temple of Jupiter is cleansed, with this.....houses are purified and due expiation made. There are two varieties of it: the one, that is thickly covered with leaves (V. supina) is thought to be the female plant; that with fewer leaves (V. officinalis), the male. Pliny then notices the ridiculous superstitions of the Magi in reference to the plant, and remarks that the plant bruised in wine in used as a remedy for the stings of serpents. De Gubernatis states that Verbena was held in much the same estimation among the Romans as Kusa grass and the Tulasi plant among the Hindus. It bore numerous synonyms, such as Tears of Isis, Tears of Juno, Mercury's Blood, Demetria, Cerealis, &c. In the Middle Ages Verbena was held in high estimation by the Christian priesthood. Piperno...states, on the authority of Savonarola, that 'Verbena menducata non permittit per septem dies coitum'. It was considereed to be a purifying herb which enforced chastity. In Sicily it is used as a charm to cure diseases at the present day along with fennel." He then quotes an Italian prayer "used in curing polypus with it." Freely translated, the prayer is "Lucia, do not cry; come into my garden, gather the leaves of Verbena and Fennel. Thou hast planted it; thou hast trodden upon it. The scourge of polypus will melt away and die." The exorciser then makes three signs of the cross on the polypus with a clove of garlic. In some parts of Piedmont the people believe tha rubbing the palm of the hand at sunset with Verbena will ensure the goodwill of the first person whose hand they grasp."

Ruíz & Pavon (1798) tell us that in South America V. officinalis is used "Ad mensium obstructiones ciendas, et abortum pro movendum ab incolis decoctum commendatur".

Kamm (1938) adds further to the lore of this species when she tells us that "In pagan times it was the purification herb par excellence and the altar of Juniper was cleaned with it before the feast of the gods. Houses were purified with it in Greece and it may have been the plant used to cleanse the table of Baucis and Philemon upon the visit of the strangers although one of the mints is also regarded as the aromatic used. Thus early symbolic, vervain was woven into garlands for special religious festivals and Virgil says priests in celebrating their rites

'In purest white.....their heads attire,
And o'er their linen hoods and shaded hair,
Long twisted wreaths of sacred vervain wear.'
-- Aeneid, Book XII.

also decorated altars both in temples and the home:

'Festoon these altars and fat vervain burn,'

says Virgil (Book I). This writer [Publius Vergilius Maro, lived 70--19 B.C.] mentions vervain many times in his various works, the force of its powers indicated in this passionate appeal:

'Burn rich vervain and frankincense that I may array with magic spell and turn my lover's cool mood to passion!'
-- Eclogues, Book VIII

"Horace [Quintus Horatius Flaccus, lived 65--8 B.C.], in his charming Ode to Phyllis (Book IV), indicates its use in the home thus:

'I have in my garden, Phyllis, parsley for weaving garlands; I have a large abundance of ivy wherewith you bind your hair and brightly shine. The house is smiling with silver; the altar, twined with wreaths of holy vervain, longs to be sprinkled with the sacrifice of a lamb.'

"Virgil's love of quiet pastoral life is indicated in this quotation from the Georgics (Book IV):

'I saw a heavy Corycian swain, lord of a few acres of unclaimed soil, a domain too barren for the plough, unfitted for the flock, and ungracious to the vine. And yet, as he planted his pot-herbs here and there among the bushes, with white lilies and vervain, and fine-grained poppies about them, he matched in contentment the riches of kings.'.....

"Vervain was an herb of magic. Pliny [Gaius Plinius Secundus, lived 23--79 A.D.] tells of a messenger sent to a home to demand restitution of stolen goods, who carried with him a prig of vervain to assure return of the goods lest the holder bring upon his head the wrath of the gods. Verbenarius, one of the ambassadors sent by the Romans to a certain enemy, wore a garland of this plant to insure his personal safety, as a modern warrior might carry a flag of truce (Sir Thomas Elyot, Castell of Helth, 1539). Livy [Titus Livius, lived 59 B.C.--17 A.D.] says the ambassadors to a truce 'should carry with them, one by himself, certain flint stones and likewise verven'.

"The Druids of Devon and Cornwall looked upon the plant as a magic herb; it was used in foretelling events and gathered at the rise of the dog star. On Midsummer's Eve, the turning-point in the sun's movement, in villages of Germany, says a sixteenth century writer, people young and old gathered about fires wearing chaplets of mugwort and vervain, and performing ceremonies intended to work a charm upon the sun and lure it back again.

"This rite performed on a sick man and copied from a fourteenth century manuscript is part of a very old superstition:

'If a man lie sick, to know whether he shall live or die, take vervain in thy right hand and take his right hand in thine; and let the herb be between, so that he doth not know it. Ask him how he fareth and how he hopeth of himself. If he feels he is doomed, he will die, but if he be hopeful of recovery, so it shall be.'

"However, the plant has still another, and pleasanter role in literature, as depicted by John Fletcher in his charming pastoral drama 'The Faithful Shepherdess' (1609), upon which Milton is said to have based his masque 'Comus'. Clorin watching over her flocks and sorting over the various herbs she has collected on the mead recites the virtues of each as she mourns her dead lover. Of vervain she says:

'Thou, light vervain, too, thou must go after,
Provoking easy souls to mirth and laughter,
No more shall I dip thee in water now,
And sprinkle every post and every bough
With thy well-pleasing juice, to make the grooms
Swell with high mirth, and with joy all the rooms.'

"Fletcher was well-versed in the virtues of various herbs, and it is quite probable that Shakespeare's usage was gleaned from his close friend and one-time collaborator.....Vervain had still one more usage -- and no herb had more -- it was a symbol of death:

'Sad cypress, vervain, yew, compose the wreath,
And every baneful green denoting death.'

--Virgil, Aeneid, Book IV."

Additional citations: EGYPT: Sisi s.n. [El Giza, 24/5/1973] (Ld). HONGKONG: S. Y. Hu 5732 (W--2697289), 10350 (W--2732313).

VERBENA ORIGENES R. A. Phil.

Additional bibliography: Moldenke, Phytologia 28: 365. 1974; Troncoso, Darwiniana 18: 318 & 409. 1974.

VERBENA OVATA Cham.

Additional bibliography: Moldenke, Phytologia 28: 365. 1974; Troncoso, Darwiniana 18: 310, 311, & 412. 1974.

Troncoso (1974) cites T. Rojas 6128 from Paraguay and Krapovickas & al. 21302 from Corrientes, Argentina, deposited in the Darwinion herbarium.

VERBENA PARODII (Covas & Schnack) Moldenke

Additional bibliography: Moldenke, Phytologia 28: 366. 1974; Troncoso, Darwiniana 18: 317, 318, & 409. 1974.

Troncoso (1974) cites Cabrera & Fabris 835 from Buenos Aires and Covas & Schnack 2112 from Mendoza, Argentina, deposited in the Darwinion herbarium at San Isidro -- the latter being the type collection.

VERBENA PARVULA Hayek

Additional bibliography: Moldenke, Phytologia 28: 366. 1974; Troncoso, Darwiniana 18: 311 & 412. 1974.

Ruiz-Terán and his associates describe this plant as "Sufrútice ramificado, 30--40 cm. Tallo y ramitas 4-gonos, verde claros. Cáliz verde claro en la mitad proximal, morado rojizo en la mitad distal, con pelos blancas. Corola morado claro". They found it flowering and fruiting in December.

Additional citations: VENEZUELA: Mérida: Ruiz-Terán, López-Figueiras, & López-Palacios 8231 (Ld). BOLIVIA: La Paz: Graf 257 (N), 351 (N).

VERBENA PERAKII (Covas & Schnack) Moldenke

Additional bibliography: Moldenke, Phytologia 28: 366 & 441. 1974; Troncoso, Darwiniana 18: 317 & 409. 1974.

Troncoso (1974) cites Covas 2110, the type collection, from Mendoza, Argentina, deposited in the Darwinion herbarium at San Isidro, Argentina.

VERBENA PERENNIS Wooton

Additional bibliography: Moldenke, Phytologia 28: 356 & 366--367 (1974) and 29: 50. 1974.

Additional citations: NEW MEXICO: Sierra Co.: O. B. Metcalfe 1568 (Ca--885098).

xVERBENA PERRIANA Moldenke

Additional bibliography: Moldenke, Phytologia 28: 367. 1974; A. L. Moldenke, Phytologia 29: 182. 1974.

VERBENA PERUVIANA (L.) Britton

Additional synonymy: Verbena chamaedryfolia f. melindrodes (Cham.) Voss in Vilm., Blumengärt., ed. 3, 1: 827 [as "melindrodes Cham."]. 1895. Verbena chamaedryfolia f. melindres splendens Hort. ex Voss in Vilm., Blumengärt., ed. 3, 1: 827. 1895. Verbena chamaedryfolia f. latifolia Hort. ex Voss in Vilm., Blumengärt., ed. 3, 1: 827, in syn. 1895. Verbena chamaedryfolia f. grandiflora Hort. ex Voss in Vilm., Blumengärt., ed. 3, 1: 827, in syn. 1895.

Additional bibliography: J. Sm., Dict. Pop. Names Pl. 428. 1882; Voss in Vilm., Blumengärt., ed. 3, 1: 825 & 827. 1895; Cooke, Fl. Presid. Bomb., ed. 1, 3: 437 (1906), ed. 2, imp. 1, 2: 518 (1958),

and ed. 2, imp. 2, 2: 518. 1967; Wyman, Gard. Encycl., imp. 1, 1153 (1971) and imp. 2, 1153. 1972; Harkness, Seedlist Handb. 181. 1974; Moldenke, Phytologia 28: 347, 367--370, 380, 383, 384, 387, 451, 457, & 464. 1974; Troncoso, Darwiniana 18: 316, 317, 319, 409, & 411, fig. a--h. 1974.

Additional illustrations: Troncoso, Darwiniana 18: 316, fig. 3 a--h. 1974.

Troncoso (1974) makes this species the type species of her Section Nobiles (Schau.) Troncoso and cites Mroginski 2 from Corrientes, Argentina, deposited in the Darwinion herbarium at San Isidro. She describes the Section's characters as "Estambres superiores sin apéndices glandulares conectivales o solamente con glándulas vestigiales sésiles, inconspicuas, en la base del conectivo. Hojas enteras, dentadas, crenadas o lobado-incisas, menos comúnmente pinatisectas."

Wyman (1971) calls the species "Peruvian verbena". Voss (1895) records the German name, "Gamanderleinblättriges Eisenkraut". He tells us that "Diese Art ist die erste und älteste Stammform unserer Blumisten-Verbenen. Die wildwachsende Pflanze, die echte, dünnstengelige 'Melindres-' Verbene, hat länglich oder länglich-lanzettliche, ungleich-eingeschnitten-gesägt, weniger stark kurz-rauhaarige Blätter, die zweite Form, f. melindroides.....hat eirunde, ziemlich gleichmässig oder doppeltgekerbt-gesägte und stärker kurz-rauhaarige Blätter. Eine Kulturform, f. Melindres splendens.....wird noch heute als niedrige, feuerrot-blühende Gruppenpflanze geschätzt."

It is of more than passing interest to note that the famous English botanist, J. Smith (1882), apparently considered that this species was the ancestor of all the garden forms now known as xV. hybrida Voss, since he says "Verbenas have become favourite plants for ornamental flower-beds, a great number of varieties having come into notice of late years, which first originated from the scarlet-flowered species, V. Melindres, a native of South Brazil." Actually, several other species entered into the ancestry of the garden plants and I personally doubt very much if the true V. peruviana was much, if at all, involved. It seems to me, based on the morphological characters of the garden forms, that it is far more likely that the red colors are derived from V. incisa Hook.

The corollas on Schinini 6805 are described as having been "red" when fresh. Harkness (1974) speaks of the flowers of V. peruviana being "scarlet to pink" -- the pink form to which he here refers is probably f. rosea Moldenke, which see.

Additional citations: ARGENTINA: Corrientes: Schinini 6805 (Ld).

VERBENA PERUVIANA f. ROSEA Moldenke

Additional bibliography: Harkness, Seedlist Handb. 181. 1974; Moldenke, Phytologia 28: 370. 1974.

Harkness (1974) speaks of "pink" flowers on V. peruviana (L.)

Britton -- probably he is here referring to this form.

VERBENA PHLOGIFLORA Cham.

Emended synonymy: Verbena phlogifolia Regel ex Voss in Vilm., Blumengärt., ed. 3, 1: 827, in syn. 1895. Verbena phlogiflora f. vulgaris Schau. ex Voss in Vilm., Blumengärt., ed. 3, 1: 827. 1895.

Additional bibliography: Voss in Vilm., Blumengärt., ed. 3, 1: 827. 1895; Moldenke, Phytologia 28: 370--372, 464, & 465. 1974; Troncoso, Darwiniana 18: 317, 319, & 409. 1974.

Voss (1895) tells us that "Die gewöhnliche wilde Form f. vulgaris Schau.....hat schlanke, niederliegende Stengel mit stark abstehenden, dann aufstredend-aufrechten Ästen und stets einzeln stehenden 'Doldenähren'." On the other hand, the cultivated form has "Wuchs robuster, die Stengel aufstrebend. Äste über Kreuz gegenständig, 4 kantig, mit nach abwärts gerichteter Behaarung."

Krapovickas and his associates describe the plant as a "subshrub about 1 m. tall", the corollas "purple".

Troncoso (1974) cites Smith & Klein 13223 from Santa Catarina ["Santa Catalina" sphalm.], Brazil, deposited in the Darwinion herbarium.

Additional citations: ARGENTINA: Corrientes: Krapovickas, Cristóbal, Carnevali, Quarín, González, & Isikawa 24227 (Ld).

VERBENA PLATENSIS Spreng.

Additional synonymy: Verbena teucriodes Gill. & Hook. ex Voss in Vilm., Blumengärt., ed. 3, 1: 827. 1895. Verbena scordiodes Cham. ex Voss in Vilm., Blumengärt., ed. 3, 1: 827. 1895.

Additional bibliography: Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1045. 1879; Voss in Vilm., Blumengärt., ed. 3, 1: 825 & 827. 1895; González, Lombardo, & Vallarino, Pl. Med. Vulg. Urug. 87. 1939; Weiss & O'Brien, Ind. Pl. Diseases U. S. 5: 1177. 1953; Moldenke, Phytologia 28: 372--373, 377, & 465 (1974) and 29: 78. 1974; Troncoso, Darwiniana 18: 317, 319, & 409. 1974.

Additional illustrations: Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1045. 1879; Voss in Vilm., Blumengärt., ed. 3, 1: 827. 1895.

Troncoso (1974) cites Burkart 4799 from Buenos Aires, Argentina, and Rosengurtt B.810 from Uruguay, deposited in the Darwinion herbarium at San Isidro, Argentina. González, Lombardo, & Villarino (1939) report that the species is regarded as having medicinal properties in Uruguay. Voss (1895) records the additional German name, "Gamander-Eisenkraut".

VERBENA PLATENSIS f. IVERIANA (Bosse) Moldenke, Phytologia 29: 78. 1974.

Synonymy: Verbena teucriodes f. iveriana Bosse ex Voss in Vilm., Blumengärt., ed. 3, 1: 827. 1895.

Bibliography: Voss in Vilm., Blumengärt., ed. 3, 1: 827. 1895; Moldenke, Phytologia 29: 78. 1974.

This form is described by Voss (1895) as "hat grössere, hellfleischfarbig-rosenrote Blüten, mehr aufrechten Wuchs und stärkere Behaarung". It is possibly the same as f. violacea Moldenke, but without seeing authentic material one cannot be certain of this.

VERBENA PLICATA Greene

Additional & emended bibliography: Irwin & Wills, Roadside Fls. Tex. 190. 1961; Mahler, Fl. Taylor Co. 155 & 156, fig. 241. 1973; Moldenke, Phytologia 28: 373—375 & 431. 1974; Stuckey & Wentz, Ohio Journ. Sci. 74: 34. 1974.

Additional illustrations: Mahler, Fl. Taylor Co. 156, fig. 241. 1973; Moldenke, Phytologia 28: 373 & 374. 1974.

Stuckey & Wentz (1974) cite Tracy & Earle 30 from Ward County, Texas, as an "isosyntype", deposited in the Ohio State University herbarium, commenting that the label is inscribed "14 Apr 1902" while the date appears as "16 Apr as cited in the literature". The New York Botanical Garden has one specimen with its label inscribed "S. M. Tracy F. S. Earle" and the date as "April 14, 1902", and another, also no. 30, inscribed as collected by F. S. Earle and S. M. Tracy at "Barstow, field April 15 - May 3 1902". The latter specimen was originally identified as Verbena canescens H.B.K. and does not have the phrase "Type Collection" on its label. Interestingly, the introduction to Greene's paper (1903) mentions only "Prof. S. M. Tracy" as the collector of the plants discussed therein. Stuckey & Wentz note that "Although the dates do not agree, the designation, 'Type Collection', is part of the printed label" on their specimen.

King found V. plicata growing in "fine sandy loam to clay loam", "loam to clay loam over clay loam to light clay", "neutral fine sandy loam to clay loam on gentle slopes", and in 10—29-inch sand to loamy sand over sandy clay loam, while Eckhardt encountered it in "sandy limestone loam in disturbed areas" and "locally frequent in disturbed areas consisting of loose limestone loam". The corollas are said to have been "blue" on Eckhardt 675 & 702 and "blue to purple" on Eckhardt 327.

The M. F. White 258, distributed as V. plicata, is actually V. canescens var. roemeriana (Scheele) Perry.

Additional citations: TEXAS: Coke Co.: W. King 25 (Ac), 33 (Kh), 245 (Ld), 302 (Tu), 1566 (Mi). Tom Greene Co.: Eckhardt 327 (Sl), 675 (Sl), 702 (Sl).

VERBENA PORRIGENS R. A. Phil.

Additional synonymy: Glandularia porrigens (Phil.) Troncoso, Darwiniana 18: 317. 1974.

Additional bibliography: Moldenke, Phytologia 24: 46 (1972) and 28: 457. 1974; Troncoso, Darwiniana 18: 317 & 409. 1974.

Troncoso (1974) cites Ricardi 2107 from Coquimbo, Chile, deposited in the Concepcion and San Isidro herbaria.

VERBENA PULCHELLA Sweet

Additional synonymy: Glandularia pulchella (Spr.) Troncoso, Darwiniana 18: 318. 1974.

Additional bibliography: Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1044--1045. 1879; Voss in Vilm., Blumergärt., ed. 3, 1: 825. 1895; Booth, Encycl. Ann. & Bien. Gard. Pl. 440. 1962; Wyman, Gard. Encycl., imp. 1, 1003 (1971) and imp. 2, 1003. 1972; Moldenke, Phytologia 28: 370, 375, 383, 398, 451, 457, & 464. 1974; Troncoso, Darwiniana 18: 318 & 409. 1974.

Voss (1895) regards this as conspecific and synonymous with V. tenera Spreng.

VERBENA PUMILA Rydb.

Additional bibliography: Demaree, Taxodium 1: 60. 1943; Mahler, Fl. Taylor Co. 156--157, fig. 242. 1973; Harkness, Seedlist Handb. 181. 1974; Moldenke, Phytologia 28: 376 & 464. 1974; Stuckey & Wentz, Ohio Journ. Sci. 74: 34. 1974.

Additional illustrations: Mahler, Fl. Taylor Co. 157, fig. 242. 1973.

Stuckey & Wentz (1974) cite Tracy & Earle 106 from Reeves County and 178 from Jeff Davis County, Texas, deposited in the Ohio State University herbarium, referring to them as "isosyntypes" of V. inconspicua Greene.

King and Eckhardt report finding this plant in "weakly calcareous fine sandy loam with pebbles and limestone fragments on gentle to strong slopes", in "loam to clay loam over clay loam to light clay on nearly level ground to gentle slopes", in "neutral to slightly acid fine sandy loam", and "locally frequent in disturbed areas of loose limestone loam". The corollas are said to have been "lavender" on Eckhardt 680.

The Taylor & Taylor 6231, distributed as V. pumila, is actually V. ciliata Benth.

Additional citations: TEXAS: Coke Co.: W. King 61 (Ld), 239 (Ld), 240 (Mi), 244 (Ac), 246 (Kh), 465 (Tu). Tom Green Co.: Eckhardt 680 (Sl). Ward Co.: Dunn, Cox, & Fleak 15960 (N).

VERBENA PUMILA f. ALBIDA Moldenke

Additional bibliography: Harkness, Seedlist Handb. 181. 1974; Moldenke, Phytologia 28: 376. 1974.

Harkness (1974) refers to V. pumila Rydb. with "fls. white", from Texas and Oklahoma, offered in horticultural trade seedlists.

VERBENA QUADRANGULATA Heller

Additional bibliography: Moldenke, Phytologia 28: 376--377. 1974; Stuckey & Wentz, Ohio Journ. Sci. 74: 34. 1974.

Stuckey & Wentz (1974) cite A. A. Heller 1388 from Nueces County, Texas, deposited in the Ohio State University herbarium and refer to it as an isotype.

VERBENA RACEMOSA Eggert

Additional bibliography: Moldenke, Phytologia 28: 377. 1974; Stuckey & Wentz, Ohio Journ. Sci. 74: 34. 1974.

Stuckey & Wentz (1974) cite Tracy & Earle 106a from Jeff Davis County, Texas, deposited in the Ohio State University herbarium and note that the label is inscribed "21 Apr 1902", not "23 Apr as cited in the literature.....Although the dates do not agree, the designation, 'Type Collection' [of V. pulchella Greene], is part of the printed label". In his original description of V. pulchella (1903) Greene gives the type locality as the Davis Mountains and the collection date as "23 April 1902", but cites no collector or collector's number. In the introduction of his paper he states that "Prof. S. M. Tracy" was the collector of the plant specimens discussed in the article.

VERBENA RIGIDA Spreng.

Additional synonymy: Verbena bonariensis f. venosa (Gill. & Hook.) Voss in Vilm., Blumengärt., ed. 3, 1: 826 [as "f. venosa Gill. & Hook."]. 1895.

Additional bibliography: Firminger, Man. Gard., ed. 3, 527 & 620. 1874; Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1044. 1879; Voss in Vilm., Blumengärt., ed. 3, 1: 826--827. 1895; Woodr., Journ. Bomb. Nat. 12: 359. 1899; Cooke, Fl. Presid. Bomb., ed. 1, 3: 436. 1906; Woodr., Gard. Trop., ed. 6, 445. 1910; Cooke, Fl. Presid. Bomb., ed. 2, imp. 1, 2: 517. 1958; Booth, Encycl. Ann. & Bien. Gard. Pl. 440. 1962; A. P. Balf., Ann. & Bien. Pl. 85. 1963; Batten & Bokelm., Wild. Fls. East. Cape Prov. 125, 172, & 182, pl. 99 (9). 1966; Cooke, Fl. Presid. Bomb., ed. 2, imp. 2, 2: 517. 1967; Wyman, Gard. Encycl., imp. 1, 330 & 1153 (1971) and imp. 2, 330 & 1153. 1972; Alemán Frías, Aurich, Excurra Ferrer, Gutiérrez Vázquez, Horstmann, López Rendueles, Rodríguez Graquitena, Roquel Casabella, & Schreiber, Die Kulturpfl. 19: 423. 1972; Hegenauer, Chemotax. Pfl. 6 [Chem. Reihe 21]: 676. 1973; D. Burpee, Burpee Seeds 1975: 48. 1974; Harkness, Seedlist Handb. 181. 1974; Moldenke, Phytologia 28: 265, 378--381, 451, & 464. 1974; Troncoso, Darwiniana 18: 308, 310, 311, & 412. 1974.

Additional illustrations: Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1044. 1879; Voss in Vilm., Blumengärt., ed. 3, 1: 826. 1895; Batten & Bokelm., Wild Fls. East. Cape Prov. pl. 99 (9) [in color]. 1966.

Cooke (1906) says of this plant "A dwarf spreading herbaceous plant, a native of S. America, with stiff ascending branches, rough sessile oblong-lanceolate leaves and bluish-purple flowers. The plant flowers freely in the cold season [in Bombay, India], is easy of culture, but of no great beauty." Balfour (1963) describes it as "A hardy perennial, very useful for bedding when grown as a half-hardy annual, and with small spikes of violet-purple flowers, flowering the whole summer, 1 foot. Particularly useful near the sea." Godfrey found it growing "locally abundant in old fields" in Florida.

Troncoso (1974) cites Schinini 3453 from Paraguay, Dusén 13329

from Paraná, Brazil, and Burkart 7890 from Corrientes, Argentina, deposited in the Darwinion herbarium at San Isidro, Argentina.

Harkness (1974) refers to the corollas of this species as "violet-purple".

The Moldenke & Moldenke 26823, 26855, & 26930 specimens cited below are transfers from the Bailey Hortorium herbarium.

Additional & emended citations: GEORGIA: Pulaski Co.: Moldenke & Moldenke 26930 (Ld). FLORIDA: Leon Co.: Godfrey 72332 (N). ALABAMA: Clarke Co.: Moldenke & Moldenke 26855 (Ac). MISSISSIPPI: Perry Co.: Moldenke & Moldenke 26835 (Ac, Kh, Ld). CULTIVATED: Sri Lanka: Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28290 (Ld).

VERBENA ROBUSTA Greene

Additional bibliography: Moldenke, Phytologia 28: 381--382. 1974.

Additional citations: CALIFORNIA: Santa Clara Co.: Thomas 4309 (Mi).

VERBENA RUFIFLORA Rojas, Cat. Hist. Nat. Corr. 206, nom. nud. 1897.

Bibliography: Rojas Acosta, Cat. Hist. Nat. Corr. 206. 1897; Krapovickas, Bol. Soc. Argent. Bot. 11: 269. 1970.

Nothing is known to me of this species except what is given in the literature. It is apparently supposed to be native to Corrientes, Argentina.

xVERBENA RYDBERGII Moldenke

Additional bibliography: Moldenke, Phytologia 28: 382--383, 390, 426, 429, & 464. 1974.

Additional citations: KANSAS: Riley Co.: W. T. Swingle s.n. [Manhattan, Aug. 3, 1887] (Mi).

VERBENA SCABRA Vahl

Additional synonymy: Verbena hirsuta, foliis ovato-acuminatis atque serratis, spicis tenuissimis plurimis, caliculis subadnatis Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 117. 1755.

Additional bibliography: Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 117 (1755) and ed. 2, 117. 1789; Demaree, Taxodium 1: 60. 1943; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 786. 1973; Moldenke, Phytologia 28: 383--384. 1974; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [116]. 1975.

Sloane (1755) quite correctly implies that this species is related to V. urticifolia L. and he further comments that "In floribus hujus plantae stamina semper duo, & adnata sunt; seminaque quatuor oblonga aglutinata". The calls the species "The hairy Vervine with slender spikes" and asserts that in Jamaica "This plant grows pretty common in St. Mary's; and seldom rises above two feet and a half from the root: it is rare in most other parts of the island, altho' I have met with a few specimens about the

Ferry. It thrives best in a cool and rich soyl."

The Liogiers describe the plant as "Herbácea erguida de 75 cm de alto, flores azul morado, a orilla de la carretera".

The A. H. Liogier 20675, distributed as V. scabra, is actually V. domingensis Urb., while F. R. Fosberg 33538 is V. urticifolia L.

Additional citations: HISPANIOLA: Dominican Republic: Liogier & Liogier 19446 (N).

VERBENA SCABRA var. TERNIFOLIA Moldenke, Phytologia 29: 503. 1974.

Bibliography: Moldenke, Phytologia 29: 503. 1974.

Citations: TEXAS: Tom Green Co.: Eckhardt 1739 (Z—type).

VERBENA SCROBICULATA Griseb.

Additional synonymy: Glandularia scrobiculata (Gris.) Troncoso, Darwiniana 18: 317 & 319. 1974.

Additional bibliography: Moldenke, Phytologia 28: 369, 384, & 458. 1974; Troncoso, Darwiniana 18: 317, 319, & 409. 1974.

Troncoso (1974) cites Hjerting & al. 31 from Jujuy, Argentina, deposited in the Darwinion herbarium at San Isidro, Argentina

VERBENA SELLOI Spreng.

Additional bibliography: Moldenke, Phytologia 28: 385. 1974; Troncoso, Darwiniana 18: 316—318 & 409, fig. 3 i—l. 1974.

Additional illustrations: Troncoso, Darwiniana 18: 316, fig. 3 i—l. 1974.

Troncoso (1974) cites H. L. Parker s.n. [Carrasco; Herb. Inst. Darwinion 25668] from Uruguay, deposited in the Darwinion herbariun at San Isidro, Argentina.

VERBENA SIMPLEX Lehm.

Additional & emended bibliography: Michx., Fl. Bor.-Am., ed. 1, imp. 1, 2: 14. 1803; Branner & Coville, Ann. Rep. Geol. Surv. Ark. 1888 (4): [List Pl. Ark.] 210. 1891; R. M. Harper, Torreya 20: 72. 1920; Kräusel in Just, Bot. Jahresber. 48 (1): 194. 1926; Demaree, Taxodium 1: 61. 1943; Ebinger, Trans. Ill. Acad. Sci. 66: 119. 1973; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 786, 788, & 789. 1973; Ackerm. & Bamberg in Lieth, Phenol. & Season. Model. 243. 1974; Lieth, Phenol. & Season. Model. 444. 1974; Michx., Fl. Bor.-Am., ed. 1, imp. 2, 2 [Ewan, Class. Bot. Am. 3]: 14. 1974; Moldenke, Phytologia 28: 385—387, 404, 427, 464, & 465. 1974; Rousseau, Géogr. Florist. Québ. [Trav. & Doc. Centr. Étud. Nord. 7:] 376, 480, 505, 510, 643, & 788. 1974; F. G. Taylor in Lieth, Phenol. & Season. Model. 243. 1974.

Additional illustrations: Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 789. 1973.

Demaree refers to this plant as "common" in brushy glades and in poor sandstone glades in Arkansas and found it also in that state on limestone ridges and in rocky riverbottoms, at altitudes of 550—1000 feet. Ebinger (1973) cites Ebinger 7313 from Coles County, Illinois.

Additional citations: INDIANA: Warren Co.: Friesner 22854 (Mi). KENTUCKY: Fayette Co.: Kellerman s.n. [Lexington, June 14, 1882] (Mi). ARKANSAS: Boone Co.: Demaree 61952 (Ld). Marion Co.: Demaree 63511 (Ld), 63624 (Ld), 63726a (Ld). Randolph Co.: Demaree 68443 (Ld). Sharp Co.: Demaree 68452 (Ld). Stone Co.: Demaree 57924 (Ac).

VERBENA STRICTA Vent.

Additional bibliography: Michx., Fl. Bor.-Am., ed. 1, imp. 1, 2: 14. 1803; Branner & Coville, Ann. Rep. Geol. Surv. Ark. 1888 (4): [List Pl. Ark.] 211. 1891; Georgia, Man. Weeds 345 & 346. 1914; Kräusel in Just, Bot. Jahresber. 48 (1): 194. 1926; F. E. Clements, Pl. Succ. & Indicat. 375. 1928; Demaree, Taxodium 1: 60. 1943; Weiss & O'Brien, Ind. Pl. Diseases U. S. 5: 1177 & 1178. 1953; Wyman, Gard. Encycl., imp. 1, 1153--1154. 1972; Bullington, Trans. Ill. Acad. Sci. 66: 73. 1973; Hegnauer, Chemotax. Pfl. 6 [Chem. Reihe 21]: 661. 1973; Hitchc. & Cronq., Fl. Pacif. Northw. 398, fig. 2b. 1973; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 786, 788, & 789. 1973; Howes, Dict. Useful Pl. 270. 1974; Jones & Bell, Trans. Ill. Acad. Sci. 67: 87. 1974; Michx., Fl. Bor.-Am., ed. 1, imp. 2, 2 [Ewan, Class. Bot. Am. 3]: 14. 1974; Moldenke, Phytologia 28: 388--391, 426, 427, 430, & 465. 1974; Rousseau, Géogr. Florist. Québ. [Trav. & Doc. Centr. Étud. Nord. 7:] 377, 465, 643, & 788. 1974.

Additional illustrations: Hitchc. & Cronq., Fl. Pacif. Northw. 398, fig. 2b. 1973; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 789. 1973.

Bullington (1973) records this species from Ogle County, Illinois, while Jones & Bell (1974) found it in Piatt County. If this plant becomes a "nuisance weed", Georgia (1914) says "Only by a short rotation of cultivated crops is it practicable to rid the ground of the perennial roots and the dormant seeds of this weed."

Weiss & O'Brien (1953) record the following pests and diseases as attacking this species in the United States: Ascochyta verbenae Siem., a leaf-spot (in Wisconsin), Cercospora verbenae-strictae Pk. (Illinois & Kansas), Erysiphe cichoracearum DC., a powdery mildew (general), Phyllosticta texensis Seaver, a leaf-spot (Texas), Puccinia vilfae Arth. & Holw., a rust (Indiana to Oklahoma and South Dakota), and Septoria verbenae Rob., a leaf-spot (Vermont to Mississippi, Texas, and South Dakota).

Additional citations: INDIANA: Pulaski Co.: Friesner 22373 (Mi). KANSAS: Riley Co.: Varney s.n. [Aug. 9, 1889] (Mi).

VERBENA STRIGOSA Cham.

Additional bibliography: Moldenke, Phytologia 28: 391. 1974.

Recent collectors note that this plant grows from a xylopodium and have found it in anthesis (in addition to the months previously reported) in September. The corollas are said to have been "violet" in color on Hatschbach 32594.

Additional citations: BRAZIL: Paraná: Hatschbach 32594 (N).

xVERBENA STUPROSA Moldenke

Synonymy: xVerbena stiposa Moldenke, Phytologia 28: 465, in syn. 1974.

Additional bibliography: Moldenke, Phytologia 28: 391, 429, & 465. 1974.

Additional citations: ARKANSAS: Clay Co.: Eggert s.n. [N. Y. Bot. Gard. Type Photo neg. 8818] (N--photo of type, Z--photo of type).

VERBENA SUBINCANA (Troncoso) Shinners

Additional bibliography: Moldenke, Phytologia 24: 226. 1972; Heslop-Harrison, Ind. Kew. Suppl. 15: 142. 1974; Troncoso, Darwiniana 18: 318 & 409. 1974.

VERBENA SULPHUREA D. Don

Additional bibliography: Moldenke, Phytologia 28: 345, 391, 464, & 465. 1974; Troncoso, Darwiniana 18: 318 & 409. 1974.

VERBENA SUPINA L.

Additional & emended bibliography: L., Sp. Pl., ed. 1, imp. 1, 1: 21. 1753; L., Syst. Nat., ed. 10 [Stockh.], 2: 852 (1759) and ed. 10 [Halle], 2: 852. 1760; Ruíz & Pav., Fl.Peruv. & Chil. 1: 21. 1798; Dymock, Warden, & Hooper, Pharmacog. Ind. 3: 58. 1893; L., Sp. Pl., ed. 1, imp. 2, 1: 21 (1907), ed. 1, imp. 3, 1: 21 (1907), and ed. 1, imp. 4, 1: 21. 1934; Blakelock in H. Field, Contrib. Fauna & Fl. SW. Asia [7]. 1955; L., Sp. Pl., ed. 1, imp. 5, 1: 21. 1957; V. J. Chapm., Salt Marshes & Salt Deserts, ed. 1, 225 & 389. 1960; Dymock, Warden, & Hooper, Hamdard 15: 345. 1972; R. R. Stewart, Annot. Cat., in Nasir & Ali, Fl. W. Pakist. 608. 1972; V. J. Chapm., Salt Marshes & Salt Deserts, ed. 2, 225 & 389. 1974; Moldenke, Phytologia 28: 362, 391--393, & 441. 1974; Monod, Candollea 29: 412. 1974; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [116]. 1975.

Blakelock (1955) cites an unnumbered Lazar collection from Iraq.

VERBENA SWIFTIANA Moldenke

Additional bibliography: Moldenke, Phytologia 24: 231. 1972; Troncoso, Darwiniana 18: 311 & 412. 1974.

VERBENA TECTICAULIS Troncoso

Additional bibliography: Moldenke, Phytologia 24: 232. 1972; Heslop-Harrison, Ind. Kew. Suppl. 15: 142. 1974.

VERBENA TENERA Spreng.

Additional bibliography: Voss in Vilm., Blumengärt., ed. 3, 1: 825--826. 1895; Wyman, Gard. Encycl., imp. 1, 1003 & 1153 (1971) and imp. 2, 1003 & 1153. 1972; Moldenke, Phytologia 28: 356, 375, 394--395, 398, 451, 462, & 465. 1974; Troncoso, Darwiniana 18: 317, 318, & 409. 1974.

Additional illustrations: Voss in Vilm., Blumengärt., ed. 3, 1: 825. 1895.

Voss (1895) includes V. multifida Hort., V. pulchella Sweet, and Shuttleworthia pulchella Meissn. in the synonymy of V. tenera. The first of these names I feel should belong in the synonymy of V. laciniata, the second is a valid species, and the third is a synonym of the second. He records the popular German name, "zartes Eisenkraut" for V. tenera.

Troncoso (1974) cites Krapovickas & Cristóbal 15910 from Corrientes, Argentina, deposited in the Darwinion herbarium at San Isidro, Argentina.

VERBENA TENERA var. MAONETTI Regel

Additional synonymy: Verbena tenera f. maonetti Voss in Vilm., Blumengärt., ed. 3, 1: 826. 1895. Verbena tenera x incisa Voss in Vilm., Blumengärt., ed. 3, 1: 826. 1895.

Additional bibliography: Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1044 & 1045. 1879; Voss in Vilm., Blumengärt., ed. 3, 1: 826. 1895; Booth, Encycl. Ann. & Bien. Gard. Pl. 440. 1962; Moldenke, Phytologia 28: 395. 1974.

Additional illustrations: Rümpler in Vilm., Illustr. Blumeng., ed. 2, 1044. 1879.

Voss (1895) says "V. tenera f. maonetti ist ein Bastard V. tenera x V. incisa und zudem die Mutterpflanze des gestreisten Blumisten-Eisenkrautes, der sogen. 'Italienischen Verbenen'." Personally, I doubt very much if V. incisa Hook. is at all involved in the ancestry of this taxon.

VERBENA TENUISECTA Briq.

Additional bibliography: A. P. Balf., Ann. & Bien. Fls. 85. 1963; Khush, Cytogen. Aneupl. 15, 148, 149, & 301. 1973; Howes, Dict. Useful Pl. 167. 1974; Moldenke, Phytologia 28: 345, 362, 375, 394--398, 440, 441, 443, & 451. 1974.

The corollas are described as having been "purplish-blue" when fresh on S. Y. Hu 6016, "purple" on his no. 9643, and "violet" on Hatschbach 23884. Hu describes the plant as a "perennial herb, creeping and forming roots [at the nodes].....rare" on Victoria Island, Hongkong. The corollas were "lilac" in color on Schinini & Quarín 7011.

Material has been misidentified and distributed in some herbaria under the name, "V. bipinnalefida Nutt." My good friend, Dr. Vivi Täckholm, distinguished expert on the flora of Egypt, tells me that this plant has always been known as V. bipinnatifida in Egypt.

Lehr found V. tenuisecta "infrequent" in Maricopa County, Arizona. Khush (1973) says that trisomics have been produced from progenies of triploids by Arora & Khoshoo (1969). On page 148 of his work he lists the common name "moss" [sic]; on page 149 he avers that the trisomics are morphologically distinct and can be distinguished from each other phenotypically.

Most of the specimens collected by my wife and myself in the

southeastern United States, cited below, are transfers from the Bailey Hortorium herbarium.

Material of V. tenuisecta has been misidentified and distributed in some herbaria as Glandularia aristigera (S. Moore) Troncoso.

Additional & emended citations: GEORGIA: Calhoun Co.: Moldenke & Moldenke 26905 (Tu). Pulaski Co.: Moldenke & Moldenke 26927 (Ac). Warren Co.: Moldenke & Moldenke 26984 (Ld). Worth Co.: Moldenke & Moldenke 26914 (Ld). FLORIDA: Okaloosa Co.: Moldenke & Moldenke 26738 (W). Washington Co.: Moldenke & Moldenke 26744 (Ld). ALABAMA: Barbour Co.: Moldenke & Moldenke 26870 (Ac). Butler Co.: Moldenke & Moldenke 26865 (Tu). MISSISSIPPI: Pearl River Co.: Moldenke & Moldenke 26799 (Kh). Perry Co.: Moldenke & Moldenke 26827 (Mi). ARIZONA: Maricopa Co.: Lehr 786 (N). BRAZIL: Mato Grosso: Hatschbach 23884 (Mi). ARGENTINA: Corrientes: Schinini & Quarín 7011 (Ld). CULTIVATED: Hongkong: S. Y. Hu 6016 (W-2697282), 9643 (W—2730997).

VERBENA TENUISECTA var. ALBA Moldenke

Additional bibliography: Moldenke, Phytologia 28: 397—398, 440, & 441. 1974.

The specimen cited below is a transfer from the Bailey Hortorium herbarium.

Emended citations: GEORGIA: Baker Co.: Moldenke & Moldenke 26892 (Kh).

VERBENA TRISTACHYA Troncoso & Burkart

Additional bibliography: Moldenke, Phytologia 24: 244. 1972.

Krapovickas and his associates found this species in fruit in December.

Additional citations: ARGENTINA: Corrientes: Krapovickas, Cristóbal, Carnevali, Quarín, González, & Isikawa 24385 (Z).

VERBENA URTICIFOLIA L.

Additional & emended bibliography: Breyn., Prod. Fasc. Rar. Pl., ed. 2, 2: 104. 1739; L., Sp. Pl., ed. 1, imp. 1, 1: 20. 1753; Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 117. 1755; L., Syst. Nat., ed. 10 [Stockh.], 2: 852 (1759) and ed. 10 [Halle], 2: 852. 1760; Sloane, Civil & Nat. Hist. Jamaic., ed. 2, 117. 1789; Ruíz & Pav., Fl. Peruv. & Chil. 1: 21. 1798; Michx., Fl. Bor.-Am., ed. 1, 2: 15. 1803; Branner & Coville, Ann. Rep. Geol. Surv. Ark. 1888 (4): [List Pl. Ark.] 211. 1891; L., Sp. Pl., ed. 1, imp. 2, 1: 20 (1907) and ed. 1, imp. 3, 1: 20. 1907; Georgia, Man. Weeds 343—345. 1914; L., Sp. Pl., ed. 1, imp. 4, 1: 20. 1934; Demaree, Taxodium 1: 61. 1943; Weiss & O'Brien, Ind. Pl. Diseases U. S. 5: 1177 & 1178. 1953; L., Sp. Pl., ed. 1, imp. 5, 1: 20. 1957; Bullington, Trans. Ill. Acad. Sci. 66: 73. 1973; Hegnauer, Chemotax. Pfl. 6 [Chem. Reihe 21]: 661. 1973; C. M. Frederick, Ohio Journ. Sci. 74: 111. 1974; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 786 & 787. 1973; Frederick, Ohio Journ. Sci. 74: 111. 1974; Howes, Dict. Use-

ful Pl. 270. 1974; Jones & Bell, Trans. Ill. Acad. Sci. 67: 87. 1974; Michx., Fl. Bor.-Am., ed. 1, imp. 2, 2 [Ewan, Class. Bot. Am. 3]: 15. 1974; Moldenke, Phytologia 28: 349, 381, 399—401, 404, 427, 429, 464, & 465. 1974; Rousseau, Géogr. Florist. Québ. [Trav. & Doc. Centr. Étud. Nord. 7:] 377, 467, 479, 504, 516, 644, & 788. 1974.

Additional illustrations: Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 787. 1973.

Willis (1894) records V. urticifolia from Westchester County, New York, Jackson (1894) from Worcester County, Massachusetts, where, he says, it grows in waste ground, Stalter (1972) from Georgetown County, South Carolina, and Ellis, Wofford, & Chester (1971) from Stewart County, Tennessee. Bostick (1971) records it from Henry or Rockland County, Georgia, while Bradley (1955) says that it occurs occasionally in mixed open fields in Fairfield County, Connecticut. Blewitt (1926) says that it is "Frequent. Fields, roadsides and waste places, in dry soil. July—Aug." in New Haven County, Connecticut. Benner (1932) reports it as common in rather dry soil in waste places, along roadsides, and in fields in Bucks County, Pennsylvania, citing collections by Long from Narrowsville, Erwinna, Springtown, Dublin, and Penns Park, by Benner from Shelly, Telford, and Brownsburg, by McDowell from Neshaminy, and by Butler from Edison. Eilers (1971) reports it as common in openings in woods in Benton, Blackhawk, Buchanan, Cerro Gordo, Fayette, Floyd, Grundy, Hardin, Howard, Linn, and Winneshiek Counties, Iowa. Bullington (1973) encountered it in Ogle County, Illinois, while Jones & Bell (1974) found it in Piatt County.

Fell (1955) asserts that in Winnebago County, Illinois, this species "commonly grows in damp shady places. On Mitchell Road near Ill. Rt. No. 173 we found a patch with blue flowers but lacking other evidence of hybridization. Crosses with V. hastata, x engelmannii, have small blue flowers. Not common." Wherry (1971) records it from Montgomery County, Pennsylvania. Barans (1974) lists it from James City County, Virginia, where, he says, it is common in open woods, woodland borders, and cutover areas. Musselman and his associates (1971) report that it grows in woods, dry open woods, thickets, and roadsides in Rock County, Wisconsin. Dole (1937) asserts that it is common on "Waysides and waste places in the lower altitudes" in Vermont. Beaman (1970) records it from Ingham County, Michigan, where he found it "scattered through the woods, in some areas very abundant", citing Grashoff 13. Frederick (1974) encountered it in Champaign County, Ohio, while Fosberg found it growing "in weedy cleared ground in thin oak woods with very little undergrowth on [a] very slight slope". Demaree found it growing on moist creek banks and bottoms in Arkansas.

The Engelmann s.n. cited below consists solely of floral dissections mounted for comparison with those of related species and natural hybrids.

Stone (1911) asserts that the species is based on specimens

from "Virginia and Canada" and cites Knieskern 23 and Britton 194 as substantiation of his record of it from the New Jersey pine-barrens. He avers that it is "Frequent in the Northern and Middle Districts; usually in cultivated or waste ground. Two records from the Pine Barrens are obviously recently introduced plants". These, he says, are from Landisville and Weymouth. The Corrells (1972) give its habitat and distribution as "Low rich or open woods, wet meadows, thickets, river floodplains and bottomlands, waste places, fencerows, pastures and streamsides, Okla. (Murray Co.) and in Tex. from Bowie and Wilbarger to Newton, Brazoria and Gonzales cos., also in Wheeler Co. in the Panhandle, June--Oct.; Que. and Ont. to Neb., s. to Fla. and w. to Tex. and Okla." Wilkinson & Jaques (1972) tell us that it is "Common in pastures, fields and waste land", flowering from June to September. Recent collectors have encountered it in old fields, marshes, and campgrounds.

Hupke, who found V. urticifolia growing as a weed in Obenhessen, West Germany, in 1967, asserts that it came there "aus Wollstaubaussaat von Australien ewachsen", which is most remarkable, if true. I have no records of its being a weed in sheep pastures in Australia -- nor Argentina.

Additional common names listed for this plant beyond those previously reported by me are "netted-leaved vervain", "nettle-leaved verbena", "verveine à feuill. d'ortie", and "verveine étalée". Paxton (1840) says that it was introduced into cultivation in England in 1818.

Miller (1973) reports the isolation of verbenalin, the glucoside of verbenalol, from this species, while Grieve (1967) assert that "The root, boiled in milk and water with the inner bark of Quercus Alba, is said to be an antidote to poisoning by Rhus Toxicodendron."

Delotit (1970) describes the seeds as follows: "Oblong in outline; frequently slightly wider at the apex and gradually tapered to the base. Dorsal side convex, its margins winged downward; ventral side granular, two-faced forming a longitudinal ridge where joined. Dorsal side usually with three and occasionally five fine, weak longitudinal ribs which are joined by a few weak transverse ridges that frequently occur only between the margin and first rib in the upper one-third of the seed. Seed scar oval, oblique, white. Brown to reddish-brown. 1.5—1.8 mm long, 0.5—0.6 mm wide." Martin, Zim, & Nelson (1951) assert that these seeds are eaten by such birds as the stilt sandpiper, lark bunting, cardinal, junco, and field, song, swamp, tree, and white-crowned sparrows, and the entire plant by cottontail rabbits.

The Fedde & Schuster (1932) reference in the bibliography of this species bears the date "1925" on its title-page, but was not actually published until 1932.

Weiss & O'Brien (1953) list the following pests and diseases as attacking this species in the United States: Erysiphe cichoracearum DC., a powdery mildew (general), Puccinia vilfae, a rust (from Indiana to Oklahoma and South Dakota), Septoria verbenae

Rob., a leaf-spot (Vermont to Mississippi, Texas, and South Dakota), and an unidentified virus, causing a mosaic (Iowa). In Trans. Wisc. Acad. 53: 195 (1965) Ascochyta aureomaculata Greene, a leaf-spot, is added to the list.

If this species becomes a "nuisance weed", Georgia (1914) says that "Small areas may be grubbed out or hand-pulled when the ground is soft; but land badly infested with this weed should be put under cultivation for a short rotation, in order that its perennial roots and dormant seeds may be cleaned from the soil."

Verbena urticifolia var. simplex Farwell, hitherto relegated to synonymy here, is now regarded by me as a valid variety, which see below.

The Lawrence & Dress 570, distributed as V. urticifolia, is actually V. hastata f. albiflora Moldenke, Nash 1248 is V. scabra Vahl, and Beach s.n. [July 30, 1885], Demaree 14218, F. R. Fosberg 48000, and F. C. Stewart s.n. [July 25, 1892] are V. urticifolia var. leiocarpa Perry & Fernald.

Additional citations: NEW YORK: Albany Co.: C. A. Brown 742 (Mi). Ontario Co.: Graves s.n. [Aug. 26, 1920] (Ba), s.n. [8.26. 23] (Ba), s.n. [Aug. 22, 1924] (Ba). NEW JERSEY: Middlesex Co.: Halsted 175 (Ba). Monmouth Co.: Moldenke & Moldenke 28908 (E, Gz). Somerset Co.: Moldenke & Moldenke 28676 (Ac, Gz, Kh). Warren Co.: Moldenke & Moldenke 26098 (Ld). MARYLAND: Prince Georges Co.: E. C. Leonard 20931 (W--2162832). Plummer's Island: A. S. Hitchcock 15754 (W--2761256); Hotchkiss & Leonard 3409 (W--2761261); Killip 31887 (W--2761257); P. C. Standley 11821 (W--895396). DISTRICT OF COLUMBIA: Steele s.n. [July 7, 1896] (W--364287); Tidestrom 8321 (W--1769345); Ward s.n. [July 14, 1884] (W--147592), s.n. (W--155627). VIRGINIA: Arlington Co.: Allard 11412 (W--1896244). Fairfax Co.: E. H. Walker 3665 (W--1920723). Fauquier Co.: Allard 5363 (W--1787566), 7391 (W--1813146), 11989 (W--1916565), 12028 (W--1916564); F. R. Fosberg 33538 (W--26811553). Loudoun Co.: Allard 1953 (W--1728795), 21188 (W--2098549), 21560 (W--2134499); Hambleton 243 (W--2345939). Prince William Co.: Allard 803 (W--1677514), 3204 (W--1734687), 3351 (W--1734821), 20726 (W--2098520). NORTH CAROLINA: Davie Co.: Radford 14848 (Bl--150280). OHIO: Butler Co.: Cobbe 144 (Bl--161253). Hamilton Co.: E. L. Braun s.n. [VIII-5-05] (W--2712374). Lorain Co.: Dick s.n. [Oberlin, July 26, 1894] (Mi). INDIANA: Fulton Co.: Friesner 23098 (Mi). KENTUCKY: Owen Co.: E. L. Braun 3176 (W--2667619). KANSAS: Atchison Co.: Horr & McGregor E.531 (Bl--88313). Riley Co.: Varney s.n. [July 1889] (Mi). MISSOURI: Marion Co.: J. Davis s.n. [Hannibal, July 23, 1913] (E--1023345). Montgomery Co.: S. R. Hill 1215 (N). Saint Louis City: Engelmann s.n. (E--117332); Muehlenbach 3836 (Ld). ARKANSAS: Hempstead Co.: Demaree 63445 (Ac), 67156 (Ld). TEXAS: Smith Co.: H. E. Moore 899 (Ba). GER-

MANY: Hupke s.n. [1.8.1967] (Bl--218865).

VERBENA URTICIFOLIA var. INCARNATA (Raf.) Moldenke

Additional synonymy: Verbena urticifolia β floribus rubicundis Willd., Enum. Pl. Hort. Berol. 2: 634. 1809.

Additional bibliography: Willd., Enum. Pl. Hort. Berol. 2: 634. 1809; J. Torr., Fl. State N. Y. 2: 52. 1843; Moldenke, Phytologia 24: 251 & 252 (1972) and 28: 401 & 465. 1974.

It is interesting to note that both Willdenow (1809) and Torrey (1843) noted a pink-flowered form of this species, thus adding support to my belief that this is the taxon to which Rafinesque (1832) referred when he proposed his new name.

VERBENA URTICIFOLIA var. LEIOCARPA Perry & Fernald

Additional & emended bibliography: Musselman, Cochrane, Rice, & Rice, Mich. Bot. 10: 184. 1971; Wherry, Bartonia 41: 79. 1971; D. S. & H. B. Correll, Aquat. & Wetland Pl. SW. U. S. 1399. 1972; Moldenke, Phytologia 24: 248, 250--252, & 427. 1972; Strausbaugh & Core, Fl. W. Va., ed. 2, 3: 786. 1973.

The Corrells (1972) say of this variety "known from Cass County, Tex.; it occurs sporadically almost throughout the extralimital range of the species". Recent collectors have found it in valley land at 180 feet altitude. Musselman and his associates (1971) encountered it growing along roadsides in Rock County, Wisconsin, and cite Wickham s.n. [1947], deposited in the University of Wisconsin herbarium. Demaree reports it as "common" on rocky ridges, at 600 feet altitude, in Arkansas. Wherry (1971) records it from Montgomery County, Pennsylvania.

The Allard 11989 and Hotchkiss & Leonard 3409, distributed as var. leiocarpa, appear, rather, to represent typical V. urticifolia L.

Additional citations: MARYLAND: Frederick Co.: L. B. Smith 5470 (W--2098181). DISTRICT OF COLUMBIA: Leonard & Killip 1547 (W--1769571); Ward s.n. [1878] (W--2761253), s.n. (W--155626). VIRGINIA: County undetermined: F. R. Fosberg 48000 [Lands Run] (W--2685648). INDIANA: Orange Co.: Friesner 22803 (Mi). IOWA: Story Co.: Beach s.n. [July 30, 1885] (Ba); F. C. Stewart s.n. [July 25, 1892] (Ba). ARKANSAS: Arkansas Co.: Demaree 14218 (Ba). Stone Co.: Demaree 65385 (Ld).

VERBENA URTICIFOLIA var. SIMPLEX Farwell, Papers Mich. Acad. Sci. 3: 103. 1924.

Bibliography: Farwell, Papers Mich. Acad. Sci. 3: 103. 1924; Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 1076 [1058]. 1932; Moldenke in Lundell, Fl. Tex. 3 (1): 24. 1942; Moldenke, Phytologia 11: 328 (1965) and 28: 429 & 465. 1974

The original description of this variety (1924) is as follows: "Stems 4 to 8 dm. in height, strictly simple and terminated by a single filiform raceme about a decimeter in length and often with a similar simple raceme from the axiles of the 3 or 4 uppermost

pairs of leaves. Nutlets smaller than those of the typical form, 1 1/4 -- 1 1/2 mm. in length. A slender unbranched woods form with smaller flowers and fruits. In woods near Lakeville, Billington, Farwell & Gladewitz, No. 6443, Oct. 11, 1922; Northville, No. 6463, Oct. 18. Mr. Gladewitz has collected it also near Vassar." These localities are in Oakland, Wayne, and Tuscola Counties, Michigan.

xVERBENA VAGA Moldenke

Additional synonymy: Glandularia megapotamica x G. santiaguensis Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968.

Additional bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968; Moldenke, Phytologia 24: 252 & 451. 1972.

VERBENA VALERIANOIDES H.B.K.

Additional bibliography: Schau., Linnaea 20: [476]. 1847; Moldenke, Phytologia 24: 252. 1972.

VERBENA VIOLATA Rojas, Cat. Hist. Nat. Corr. 206, nom. nud. 1897.

Bibliography: Rojas Acosta, Cat. Hist. Nat. Corr. 206. 1897; Krapovickas, Bol. Soc. Argent. Bot. 11: 269. 1970.

Nothing is known to me about this species except what is given in the literature. It is apparently native to Corrientes, Argentina.

VERBENA WRIGHTII A. Gray

Additional & emended bibliography: E. B. Bartr., Bull. Torrey Bot. Club 49: 248. 1922; Irwin & Wills, Roadside Fls. Tex. 189. 1961; Pase & Johnson, U. S. Forest Serv. Res. Paper RM.41: 18. 1968; Moldenke, Phytologia 24: 254--255. 1972; Burlage, Wild Flow. Pl. Lakes Country 144. 1973; Rickett, Wild Fls. U. S. 6 (3): [543], 544, & 783, pl. 195. 1973; Moldenke, Phytologia 28: 242, 344, 345, & 431. 1974.

Additional illustrations: Rickett, Wild Fls. U. S. 6 (3): [543], pl. 195 (in color). 1973.

Recent collectors describe this plant as having decumbent stems, many stems per clump -- and this describes exactly the plants my wife and son and I saw so abundantly in Apache County, Arizona, forming a spectacularly beautiful display on roadbanks and hillsides. Other recent collectors have found it growing in gypseous soils on knolls, on rocky knolls, in sandy soil of Larrea communities, in overgrazed gravelly ground, in the pinyon-juniper-oak community on rocky hillsides, on slopes with juniper, along roadsides, on foothills, on grassy slopes, and in Yucca-Agave associations below Fouquieria. Pase & Johnson (1968) describe it as an "occasional chaparral plant in dry uplands", Dunn encountered it in an apple orchard in a yellow pine and juniper area, Spellenberg found it growing at the juncture of the Larrea zone with that of Juniperus monosperma in gravelly granitic sand, while Kruckeberg found it on brushy flats and slopes of open juniper-pinyon-scrub

type with Agave, Acacia, cacti, and many other shrubby species.

Bartram (1922) says that "This is one of the showiest of the early flowers in the foothills [of southern Arizona], where it blooms profusely in January". Burlage calls it the "Wright's verbena" and says of it "The flowers are reddish-purple. The foliage is coarse. The flowers form flat clusters at the top of the stalks."

The Lehto, McGill, Nash, & Pinkava 11566 collection, cited below, found among volcanic rocks at 6300 feet altitude, flowering and fruiting in July, is not typical since its inflorescences seem to have only very few inconspicuous glands on the hairs.

The corollas are described as having been "lavender" on Kruckeberg 4739 and Spellenberg & Spellenberg 3031, "vivid blue-lavender" on Spellenberg & Spellenberg 3079, "pink" on Reséndez 79 and R. Spellenberg 2989, "pink, fading paler" on Spellenberg, Delson, & Syvertsen 3294, and "deep pink-lavender" on Spellenberg & Spellenberg 3557.

The Higgins 7765 and Weber & Livingston 6258, distributed as V. wrightii, are V. ambrosifolia Rydb., while G. N. Jones 35900 is V. bipinnatifida Nutt. and Hollister 509 and N. H. Holmgren 3308 are V. gooddingii Briq.

Additional citations: TEXAS: Brewster Co.: Janke s.n. [29 March 1964] (Bl--191557); Kruckeberg 4739 (N); C. L. Lundell 13185 (Mi); Shushan s.n. [8 June 1959] (Bl--148237); Von Schrenk s.n. [Aug. 11, 1937] (E--1287033). El Paso Co.: Waterfall 3922 (E--1247452). Hudspeth Co.: L. C. Higgins 6871 (N). Jeff Davis Co.: L. C. Higgins 6827 (N); Tharp & Janszen 49-1141 (Bl--91934), Presidio Co.: Lundell & Lundell 14339 (Mi). NEW MEXICO: Catron Co.: Weber & Salamun 12790 (Bl--201130). Dona Ana Co.: Wooton s. n. [June 7, 1900] (Bl--91286). Eddy Co.: Cutak & Christ 97 (E--1286288); Spellenberg & Spellenberg 3031 (N). Grant Co.: Weber & Salamun 12873 (Bl--199904). Hidalgo Co.: Spellenberg & Spellenberg 3079 (N). Lincoln Co.: J. A. Moore 1018 (E--1024094). Luna Co.: R. Spellenberg 2989 (N). Otero Co.: D. B. Dunn 7609 (Bl--86266). Valencia Co.: Spellenberg & Spellenberg 3557 (N). ARIZONA: Apache Co.: Lehto, McGill, Nash, & Pinkava 11566 (N); Moldenke & Moldenke 27735 (Ac, Ld); Spellenberg, Delson, & Syvertsen 3294 (N). MEXICO: Coahuila: Rinehart 7004 (E--2149429). Nuevo León: Reséndez 79 (Bl--197871).

VERBENA XUTHA Lehm.

Emended synonymy: Verbena zutha Lehm. ex Moldenke, Suppl. List Invalid Names 10, in syn. 1941; Demaree, Taxodium 1: 61. 1943.

Additional bibliography: Schau., Linnaea 20: 477. 1847; E. B. Bartr., Bull. Torrey Bot. Club 49: 248. 1922; Oertel, U. S. Dept. Agr. Circ. 554: 21. 1939; Demaree, Taxodium 1: 61. 1943; Moldenke, Phytologia 24: 224 & 255--257. 1972; Anon., Biol. Abstr. 55 (10): B.A.S.I.C. S.270. 1973; Hocking, Excerpt. Bot. A.23: 291. 1974;

Moldenke, Phytologia 28: 428. 1974.

Oertel (1939) lists this among the honey and pollen plants in Louisiana. Bartram (1922) says that this plant is "Rare and local on dry slopes of the Tucson Mts." of southern Arizona. Rogers found it growing in ditches at the edge of a yard and in fields, flowering and fruiting in April. Rogers & Watson refer to it as "locally numerous" at the edges of low woods and fields. Demaree encountered "a few" on riverbottoms in Arkansas, at 255--300 feet altitude.

The Pringle s.n. [Santa Rita Mtns., May 11, 1884], distributed as V. xutha, is actually V. neomexicana var. xylopoda Perry.

Additional citations: MISSISSIPPI: Wilkinson Co.: Rogers & Watson 8453-G (N). ARKANSAS: Hempstead Co.: Demaree 63846 (Ac). Little River Co.: Demaree 54082 (Bl--239834, Bl--239888), 68513a (Ld). LOUISIANA: Cameron Par.: K. E. Rogers 7972-C (N). TEXAS: Hardin Co.: C. L. Lundell 14082 (Mi). Harris Co.: Boon 20001 (E--1292631); G. L. Fisher 51048 (Bl--252601); Lindheimer 154 (Bl--262805); Lundell & Lundell 13107 (Mi). Jefferson Co.: C. L. Lundell 14135 (Mi). Travis Co.: C. L. Lundell 11921 (Mi).

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ADDITIONAL NOTES ON THE GENUS BAILLONIA. III

Harold N. Moldenke

BAILLONIA Bocq.

Additional & emended bibliography: Bocq., Déscr. Gen. Nouv. Fam. Verbén. 1862; Ball, Notes Nat. S. Am. 201--202. 1887; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 264 & 768. 1893; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 50. 1901; Dalla Torre & Harms, Gen. Siphonog., imp. 1, 430. 1904; Reiche & Phil., Fl. Chil. 5: 303. 1910; Anon., Arnold Arb. Publ. 6:[Car. Lib. Arnold Arb.] 342. 1917; G. Klein, Handb. Pflanzenanal. 3 (2): 1224. 1932; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 50. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 264 & 768. 1946; Metcalfe & Chalk, Anat. Dicot. 1030--1034 & 1040, fig. 247 F. 1950; R. C. Foster, Contrib. Gray Herb. 184: 169. 1958; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 50. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 264 & 768. 1960; Dalla Torre & Harms, Gen. Siphonog., imp. 2, 430. 1963; Hocking, Excerpt. Bot. A.6: 532 (1963) and A.13: 571. 1968; Moldenke, Biol. Abstr. 49: 4697. 1968; Moldenke, Phytologia 16: 168 & 505. 1968; Moldenke, Résumé Suppl. 16: 15. 1968; Anon., Torrey Bot. Club Ind. Am. Bot. Lit. 3: 306 & 308. 1969; Farnsworth, Blomster, Quimby, & Schermerh., Lynn Index 6: 262 & 263. 1969; J. Hutchinson, Evol. & Phylog. Flow. Pl. [471] & 670, fig. 416. 1969; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 826 & ii. 1971; Farnsworth, Lynn Index 7: 228. 1971;